

CHIRONOMIDAE (DIPTERA) OF LOUISIANA  
 I. SYSTEMATICS AND IMMATURE STAGES OF SOME LENTIC  
 CHIRONOMIDS OF WEST-CENTRAL LOUISIANA

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NOMENCLATURE

The chironomid fauna of the Southern United States was poorly known until the publication of Henry K. Townes' monumental work on the Nearctic Chironomini (=Tendipedini) in 1945. Since that time several published works have added to the knowledge of a regional chironomid fauna. These are reviewed and the species synonymized as they apply to the present study in the systematic treatment which follows. Since Townes reviewed the synonymy of each species of Chironomini, I shall not duplicate here his lists but rather cite only those relevant contributions since 1945. For those subfamilies and tribes not included in Townes' work, as complete a synonymy as is known to me is given. Citations of the list in my 1955 paper are not given in the synonymies which follow as they were duplicated in my 1957 paper, nor are the species listed by Townes (in Johannsen and Townes, 1952) given since this publication is an abridgment of his 1945 paper.

Nomenclature of the Chironomidae is in an extremely confused state. Notable points of controversy are the Meigen 1800 versus 1803 names and the application of *Tanytarsus* by Townes in a very different sense from customary usage of approximately the previous half-century.

The Meigen names controversy as well as that of *Tanytarsus* are now before the International Commission on Zoological Nomenclature. In the interim, I am following usage that appears to be consistent with the opinion of a majority of dipterologists, as evidenced by publication and personal correspondence.

Two recent publications, Brundin (1956) and Fittkau (1962), have greatly clarified the status and position of many taxa of the Orthocladiinae and Tanypodinae, respectively. Unfortunately, an application of these works to the Nearctic fauna would necessitate a re-examination of most of the types of North American chironomids. To have a solid systematic treatment I am following

mostly the taxa of Freeman (1955-1961) that are based largely on adults. I have attempted to indicate position of appropriate species in the Brundin-Fittkau nomenclature.

The following genera and subgenera as used in this paper are compared with those given in Johannsen and Townes (1952), the most inclusive modern work on adult Chironomidae of North America.

<i>Present Usage</i>	<i>Johannsen and Townes (1952)</i>
Subfamily Tanypodinae	Pelopiinae
<i>Tanytus</i>	<i>Pelopia</i>
<i>Procladius</i>	<i>Procladius</i>
( <i>Psilotanytus</i> )	
<i>Procladius (Procladius)</i>	
<i>Coelotanytus</i>	<i>Coelotanytus</i>
<i>Pentaneura (Pentaneura)</i>	<i>Pentaneura</i> Group C-E
<i>Ablabesmyia</i>	<i>Pentaneura</i> Group A
Subfamily	
Orthoclaadiinae	Hydrobaeninae
<i>Cricotopus</i>	<i>Cricotopus</i>
<i>Nanocladius</i>	<i>Hydrobaenus</i>
	( <i>Enkiefferiella</i> )
<i>Psectrocladius</i>	<i>Hydrobaenus</i>
	( <i>Psectrocladius</i> )
<i>Smittia</i>	<i>Hydrobaenus (Smittia)</i>
Subfamily	
Chironominae	Tendipedinae
Tribe Tanytarsini	Calopsectrini
<i>Tanytarsus</i>	
( <i>Tanytarsus</i> )	<i>Calopsectra</i>
<i>Tanytarsus</i>	
( <i>Cladotanytarsus</i> )	
<i>Micropectra</i>	
Tribe Chironomini	Tendipedini
<i>Pseudochironomus</i>	<i>Pseudochironomus</i>
<i>Lauterborniella</i>	<i>Lauterborniella</i>
<i>Paralauterborniella</i>	<i>Apedilum</i>
<i>Polypedilum</i>	<i>Polypedilum</i>
( <i>Polypedilum</i> )	( <i>Tripodura</i> )
	<i>Polypedilum</i>
	( <i>Polypedilum</i> )
<i>Stenochironomus</i>	<i>Stenochironomus</i>
<i>Chironomus</i>	<i>Tanytarsus</i>
( <i>Endochironomus</i> )	( <i>Endochironomus</i> )
<i>Chironomus</i>	<i>Xenochironomus</i>
( <i>Xenochironomus</i> )	
<i>Chironomus</i>	
( <i>Cryptochironomus</i> )	<i>Cryptochironomus</i>
	<i>Harnischia</i>
<i>Chironomus</i>	
( <i>Chironomus</i> )	<i>Tendipes (Tendipes)</i>
	<i>Tendipes (Einfeldia)</i>
<i>Chironomus</i>	<i>Tendipes</i>
( <i>Dicrotendipes</i> )	( <i>Limnochironomus</i> )
<i>Glyptotendipes</i>	<i>Glyptotendipes</i>
( <i>Ptytendipes</i> )	( <i>Ptytendipes</i> )

## Scope

Most of the material included in this report was collected while the writer and two of his former graduate students, Burton R. Buckley and Robert F. Tyler, were at Northwestern State College, Natchitoches, Louisiana. Most specimens were collected from Cane River Lake, Chaplain's Lake, and the holding ponds at the United States Fish Hatchery at Natchitoches, Louisiana. Collecting methods included tent and funnel traps (Sublette and Dendy, 1958 (1959)), rearing of larvae and pupae, and light traps. From the latter, specimens included were of species known not to occur exclusively in lotic water.

A small amount of the material presented here was collected while I was engaged in research projects supported by the National Institutes of Health (RG 4594 and 6829) and the Atomic Energy Commission (AT-(40-1)-2596). Most of the results of these researches will appear elsewhere.

Disposition of material is given in parenthesis after the collection data of each species. The following abbreviations are used:

U.S.N.M.—United States National Museum Collection, Washington, D. C.

C.N.C.—Canadian National Collections, Ottawa.

A.N.S.P.—Academy of Natural Sciences, Philadelphia, Pennsylvania.

I.N.H.S.—Illinois National History Survey, Urbana, Illinois.

Duplicate material unless otherwise listed is in my personal collection.

The localities Cane River Lake, Chaplain's Lake, and the United States Fish Hatchery ponds in Natchitoches Parish, Louisiana are abbreviated C.R.L., Ch.L. and U.S.F.H., respectively.

Grateful acknowledgment is made to my wife, Mary Smith Sublette, for assistance in preparation of study material and the manuscript.

## SUBFAMILY TANYPODINAE

## TANYPUS STELLATUS Coquillett

*Tanypus stellatus* Coquillett, 1902: 89, description of adult.

*Protenches stellatus* (Coquillett); Malloch, 1915a: 383, description of pupa and adult.

*Tanypus stellatus* Coquillett; Johannsen, 1937: 20, description of larva and pupa.

*Tanypus stellatus* Coquillett; Morrissey, 1950: 90, distribution; description of pupa; phenology.

*Pelopia stellata* (Coquillett); Johannsen (in Johannsen and Townes), 1952: 10, adult, in key.

*Pelopia stellata* (Coquillett); Neff, 1955: 5, description of larva, pupa and adult.

*Pelopia stellata* (Coquillett); Tebo, 1955: 96, ecology.

*Pelopia stellata* (Coquillett); Paine and Gaufin, 1956: 296, ecology.

*Pelopia stellata* (Coquillett); Sublette, 1957: 381, ecology; phenology.

*Pelopia stellata* (Coquillett); Roback, 1957c: 47, 48, description of larva and pupa.

*Tanypus stellata* (Coquillett); Beck and Beck, 1959: 91, adult.

*Pelopia stellata* (Coquillett); Davis, 1960: 71 and following pages, ecology.

*Pelopia stellata* (Coquillett); Judd, 1960: 206, phenology.

*Pelopia stellata* (Coquillett); Judd, 1961: 95, phenology.

Males: Wing length 2.34-2.43, mean 2.37 mm (3); leg ratio 0.70-0.81, mean 0.76 (3); antennal ratio 2.12-2.30, mean 2.23 (3).

Material examined: Four males, 7-IX-56; 1 female, 11-IX-56; 1 male, 6-VII-57; 1 female, 10-IX-57; 1 male, 17-IX-57; 1 male, 14-X-57; C.R.L. One male, 20-IX-58; U.S.F.H.

## TANYPUS new species 1

Description of this new species is given by Sublette (in press in *Proc. U.S. Natl. Mus.*).

Material examined: Specimens from Natchitoches and environs were included in the type series. In addition to these I have examined 2 males, 6-IX-58; U.S.F.H.

## TANYPUS new species 2

*Protenches punctipennis* (Meigen) Malloch, 1915: 389 (in part), description of pupa and adult, misidentification of *punctipennis* Meigen.

*Tanypus punctipennis* Meigen; Morrissey, 1950: 90, phenology; misidentification of *punctipennis* Meigen.

Description of this new species is in press in *Proc. U.S. Natl. Mus.*

Larva: Described from exuviae of reared adults. Head pale yellowish, with tips of mandibles, lingula support, and posterior border of the head blackish; head length 0.54 mm. Lingula (Fig. 1) yellowish; superlingulae (Fig. 1) colorless. Labium (Fig. 2) dark brown. Antenna, Figure 3; mandible, Figure 4. Maxillary palpus 2.5 times as long as wide. Body with numerous hairs. Preanal papillae about 5 times as long as wide, slightly curved and colorless; each bears 12 long, colorless bristles; a heavy seta on anterior face. Anal prolegs with about 12 long yellowish claws which are

only slightly curved and which lie parallel to one another.

Pupa: Described from exuviae of reared adults. Pale yellowish except for blackish respiratory organs. Total length 6.98 mm. Length of pupal respiratory organs 0.68 mm. Pupal respiratory organ as shown by Malloch (1915a, Pl. XXVI, figure 13) except that the long hairs shown by him are not visible on my specimens. Abdominal tergites covered with a dense uniform shagreen. Laterally on each tergite are two sets of bristles, the alveoli of which are surrounded by a brownish spot; the anterior pair is anterolateral in position; the posterior set is more medial, in a posterolateral position. Lateral margins of all segments ciliate with a fringe of long colorless bristles which become finer and denser on posterior segments. Anal lobe as figured by Malloch (1915a, Pl. XXVI, figure 4).

The type series was, in part, taken from Cane River Lake and will not be listed here.

Additional material examined: One male, 7-IX-56; 1 female, 11-III-57; 1 male, 23-III-57; 1 male, 15-VII-57; 4 males, 2 females, 6-VIII-57; C.R.L. One female, 28-X-54; 3 males, 3-II-57; 2 males, 4-II-57; 1 male, 9-II-57; Ch.L. Three males, 1 female, 15-II-59; U.S.F.H.

The larva keys to *stellatus* in Johannsen (1937a, page 19), but appears to differ in the form of the paralaial plates (cf. Johannsen 1937a, figure 45, Pl. IV).

The pupa keys in Johannsen (op. cit.) to *punctipennis* Meigen but differs in that the eighth segment has only the fringe of finer bristles.

#### PROCLADIUS (PROCLADIUS) new species 1

*Procladius culiciformis*, American authors, nec Linné (Part?).

*Procladius culiciformis* (Linné); Darby, 1962: 37, 38, 39, 40, 42, 58, 62, 73, 77, 101, 109, 110, 113, 114, 121-128; description of larva, pupa, and adult; ecology; misidentification of *culiciformis* (Linné).

Description of this new species is in press in *Proc. U.S. Natl. Mus.*

Males: Wing length 2.61, 2.70 mm (2); leg ratio 0.74-0.78, mean 0.75 (3); antennal ratio 2.05, 2.36 (2).

Additional material examined: One female, 7-II-56; Ch.L. One male, 21-IV-58;

C.R.L. One male, 9-IV-57; 1 male, 16-IV-57; at light, Natchitoches, La.

#### PROCLADIUS (PSILOTANYPUS) BELLUS (Loew)

- Tanypus bellus* Loew, 1866: 4, description of adult.  
*Procladius bellus* (Loew); Johannsen, 1905: 128, redescription of adult (after Loew).  
 [*Procladius*] *bellus* [(Loew)]; Johannsen, 1908: 270, subfamily position; genus indeterminate.  
*Protenthes bellus* (Loew); Malloch, 1915a: 388, description of larva, pupa, and adult.  
*Procladius bellus* (Loew); Johannsen, 1937a: 23, redescription of larva and pupa, after Malloch.  
*Procladius bellus* (Loew); Judd, 1949: 8, phenology.  
*Procladius bellus* (Loew); Morrissey, 1950: 90, phenology; ecology.  
*Procladius bellus* (Loew); Johannsen (In Johannsen and Townes), 1952: 10, 11, adult, in key.  
*Procladius bellus* (Loew); Judd, 1953: 813, phenology.  
*Procladius bellus* (Loew); Sublette, 1957: 381, ecology; phenology.  
*Procladius bellus* (Loew); Judd, 1957: 400, phenology.  
*Procladius bellus* (Loew); Roback, 1957c: 48, larva and pupa, in key.  
*Procladius bellus* (Loew); Beck and Beck, 1959: 91, distribution.  
*Procladius bellus* (Loew); Davis, 1960: 71, and following pages, ecology.  
*Procladius bellus* (Loew); Judd, 1961: 96, phenology.

Males: Wing length 1.53-2.04, mean 1.72 mm (4); leg ratio 0.67-0.73, mean 0.74 (4); antennal ratio 1.52-1.84, mean 1.69 (3).

Material examined: Five males, 2-III-57; 1 male, 5 females, 11-III-57; 2 males, 1 female, 12-III-57; 4 males, 16-III-57; 1 male, 28-III-57; 2 males, 5-IV-57; 1 male, 8-IV-57; 1 male, 9-IV-57; 1 female, 12-IV-57; 1 male, 6-V-57; 1 male, 1 female, 14-V-57; 1 male, 15-V-57; 1 male, 16-V-57; 3 males, 1 female, 21-V-57; 1 male, 3-VI-57; at light, Natchitoches, La. One female, 11-VI-57; 1 male, 19-VI-57; 1 male, 1 female, 25-VI-57; 1 male, 18-VII-57; 6 males, 4 females, 13-VIII-57; 1 male, 10-IX-57; 2 males, 3-X-57; 1 male, 7-X-57; 1 male, 14-X-57, 1 male, 19/21-III-58; 1 male, 5-V-58, 1 male, 12-V-58; C.R.L. One female, 20-VIII-58; U.S.F.H.

#### COELOTANYPUS TRICOLOR (Loew)

- Tanypus tricolor* Loew, 1861: 309, description of adult.  
*Procladius tricolor* (Loew); Johannsen, 1905: 130, redescription of female, after Loew.  
 [*Coelotanypus*] *tricolor* [(Loew)]; Johannsen, 1908: 270, subfamily position; genus indeterminate.  
*Coelotanypus tricolor* (Loew); Malloch, 1915a: 396, adult.

- Coelotanypus tricolor* (Loew); Johannsen, 1926: 273, generic position.  
*Coelotanypus tricolor* (Loew); Johannsen, 1934: 348, generic position.  
*Coelotanypus tricolor* (Loew); Johannsen, 1937a: 25, generic position.  
*Coelotanypus tricolor* (Loew); Johannsen (in Johannsen and Townes), 1952: 11, adult in key.  
*Coelotanypus tricolor* (Loew); Sublette, 1957: 382, ecology; phenology.  
*Coelotanypus tricolor* (Loew); Roback, 1957a: 1-2, description of larva.  
*Coelotanypus tricolor* (Loew); Beck and Beck, 1959: 91, distribution of adult.

Female: Wing length 3.24 mm; leg ratio 0.66.

Material examined: One female, 11-IX-56; at light, C.R.L.

### COELOTANYPUS SCAPULARIS (Loew)

- Tanypus scapularis* Loew, 1866: 2, description of adult.  
*Procladius scapularis* (Loew); Johannsen, 1905: 134, description of adult.  
*Procladius scapularis* [(Loew)]; Johannsen, 1908: 270, generic position.  
*Procladius scapularis* (Loew); Malloch, 1915a: 393, description of adults.  
*Coelotanypus scapularis* (Loew); Johannsen, 1934: 348, generic position.  
*Coelotanypus scapularis* (Loew); Johannsen, 1937a: 25, generic position.  
*Procladius scapularis* (Loew); Adams, 1940: 127, distribution.  
*Coelotanypus scapularis* (Loew); Morrissey, 1950: 89, distribution; phenology.  
*Coelotanypus scapularis* (Loew); Johannsen (in Johannsen and Townes), 1952: 12, adult, in key.  
*Coelotanypus scapularis* (Loew); Neff, 1955: 7, adult; ecology.  
*Coelotanypus scapularis* (Loew); Sublette, 1957: 382, ecology; phenology.  
*Coelotanypus scapularis* (Loew); Beck and Beck, 1959: 91, distribution of adult.

Male: Wing length 2.39 mm; leg ratio 0.70; antennal ratio 3.05.

Material examined: One male, 11-IX-56; at light, C.R.L.

### COELOTANYPUS CONCINNUS (Coquillett)

- Tanypus concinnus* Coquillett, 1895: 308, description of adult female.  
*Procladius concinnus* (Coquillett); Johannsen, 1905: 129, redescription of female.  
*Procladius concinnus* (Coquillett); Johannsen, 1908: 270, generic position.  
*Procladius concinnus* (Coquillett); Malloch, 1915a: 394, description of larva, pupa and adult.  
*Coelotanypus concinnus* (Coquillett); Johannsen, 1934: 348, generic position.  
*Coelotanypus concinnus* (Coquillett); Johannsen,

- 1937a: 25, description of larva and pupa.  
*Coelotanypus concinnus* (Coquillett); Morrissey, 1950: 89, distribution and phenology.  
*Coelotanypus concinnus* (Coquillett); Johannsen (in Johannsen and Townes), 1952: 12, adult, in key.  
*Coelotanypus concinnus* (Coquillett); Roback, 1953: 108, ecology.  
*Coelotanypus concinnus* (Coquillett); Wurtz and Roback, 1953: 199, distribution; ecology.  
*Coelotanypus concinnus* (Coquillett); Paine and Gaufin, 1956: 296, ecology.  
*Coelotanypus concinnus* (Coquillett); Roback, 1957a: 47, ecology.  
*Coelotanypus concinnus* (Coquillett); Sublette, 1957: 382, ecology; phenology.  
*Coelotanypus concinnus* (Coquillett); Beck and Beck, 1959: 91, distribution of adults.  
*Coelotanypus concinnus* (Coquillett); Dendy and Sublette, 1959: 510, adults.  
*Coelotanypus concinnus* (Coquillett); Davis, 1960: 71, ecology.

Male: Wing length 3.27 mm (1); leg ratio 0.76 (1); antennal ratio 2.88 (1).

Females: Wing length 3.06-3.74, mean 3.50 mm (3); leg ratio 0.63-0.70, mean 0.67 (3).

Material examined: One female, 18-V-54; 2 females, 29-IV-57; 1 male, 1 female, 14-V-57; 1 female, 15-V-57; 1 female, 21-V-57; at light, Natchitoches, La.

### PENTANEURA (PENTANEURA) PLANENSIS Johannsen

- Pentaneura nigropunctata* (Staeger); Hauber, 1945: 502, description of adult (genitalia); phenology; misidentification of *nigropunctata* (Staeger).  
*Pentaneura planensis* Johannsen, 1946: 282, 284, description of adult.  
*Pentaneura planensis* Johannsen; Morrissey, 1950: 88, description of pupa and adult; phenology; synonymy.

This species places in the genus *Larsia* Fittkau. For reasons listed earlier, I am using the more inclusive taxon, the genus *Pentaneura*, in a broad sense.

Males: Wing length 1.78-1.80, mean 1.79 mm (4); leg ratio 0.77-0.82, mean 0.79 (4); antennal ratio 1.30-1.60, mean 1.45 (4).

Material examined: One male, 13-VIII-57; 1 male, 9-VII-58; C.R.L. Three males, 12-IX-58; 4 males, 27-IX-58; U.S.F.H.

### PENTANEURA (PENTANEURA) PILOSELLA (Loew)

- Tanypus pilosellus* Loew, 1866: 5, description of adult.  
*Tanypus pilosellus* Loew; Malloch, 1915a: 372, description of ?larva and pupa; adult. The description of the pupa does not agree with my material.  
*Tanypus pilosellus* Loew; Walley, 1928: 583, adult, in key.  
 ?*Pentaneura pilosella* (Loew); Johannsen, 1937a: 13, redescription of larva and pupa, after Malloch.

*Pentaneura pilosella* (Loew); Hauber, 1945: 502, description of adult.  
*Pentaneura pilosellus* (Loew); Johannsen, 1946: 282-283, adult, in key; description of adult.  
*Pentaneura pilosella* (Loew); Beck and Beck, 1959: 91, distribution of adults.

This species was placed by Fittkau (1962) in his genus *Labrundinia*, and with this placement I concur. For reasons given earlier I am not employing Fittkau's generic units but rather a broader, more inclusive concept of the genus *Pentaneura*. From Fittkau's exhaustive description of *Labrundinia longipalpis* (Goetghebuer) I suspect that it may be synonymous with *pilosella* (Loew). I hesitate to synonymize it, however, without examining European material. Dr. Fittkau has examined my material and agrees that only a critical comparison of material from Europe and North America can resolve the specific identities.

Males: Wing length 1.26-1.36, mean 1.32 mm (3); leg ratio 0.60-0.80, mean 0.68 (3); antennal ratio 1.21-1.30, mean 1.24 (3).

Material examined: One male, 23-VII-57; 1 male, 13-VIII-57; 3 males, 20-VIII-57; 1 male, 2 females, 27-VIII-57; 1 male, 17-IX-57; 1 male, 7-X-57; 1 male, 19-V-58; 1 male, 10-VI-58; 1 male, 19-VI-58; C.R.L. One male, 12-VIII-58; 1 male, 20-VIII-58; 30 males, 2 females, 28-VIII-58; 5 males, 6-IX-58; 35 males, 12-IX-58; 9 males, 20-IX-58; 16 males, 27-IX-58; 5 males, 4-X-58; 6 males, 15-X-59; U.S.F.H.

#### ABLABESMYIA AEQUIFASCIATA (Dendy and Sublette), new combination.

*Pentaneura* (*Ablabesmyia*) *aequifasciata* Dendy and Sublette, 1959: 507, description of adult.  
*Pentaneura* (*Ablabesmyia*) *aequifasciata* Dendy and Sublette; Darby, 1962: 37, 40, 41, 58, 73, 76, 101, 116-121, description of larva, pupa, and adult; ecology.

Males: Wing length 2.84, 2.84 mm (2); foreleg ratio 0.78, 0.80 (2); antennal ratio 2.16, 2.37 (2); fore tibial band 0.54 (1); basitarsal band 0.40 (1).

Material examined: One male, 28-III-57; 1 male, 5-IV-57; light trap, Natchitoches, La.

#### ABLABESMYIA PELEENSIS (Walley)

*Tanytus pelecensis* Walley, 1926: 64, description of adult; 1928: 585, 590, adult, in key; notes on adults.  
*Tanytus pelecensis* Walley; Adams, 1940: 126, distribution.

*Pentaneura pelecensis* (Walley); Hauber, 1945: 496, 499-500, description of pupa; adult, in key.  
*Pentaneura pelecensis* (Walley); Johannsen, 1946: 270, 274, redescription of adult; distribution.  
*Pentaneura pelecensis* (Walley); Roback, 1957c: 41, description of larva and pupa.  
*Pentaneura* (*Ablabesmyia*) *pelecensis* (Walley); Dendy and Sublette, 1959: 508, adult, in key.  
*Pentaneura* (*Ablabesmyia*) *pelecensis* (Walley); Roback, 1959: 122, added description of adult.

I have compared my material with paratypes from the Canadian National Collection kindly loaned to me by Dr. J. R. Vockeroth.

Males: Wing length 2.48-2.59, mean 2.52 mm (3); leg ratio 0.77-0.84, mean 0.81 mm (3); antennal ratio 2.27-2.50, mean 2.35 (3); fore tibial band 0.47; basitarsal band 0.37.

Material examined: Two males, 18-V-54, Natchitoches, La. One male, 14-X-57; 1 male, 21-IV-58; C.R.L. One male, 12-IX-58; 1 male, 1 female, 27-IX-58; 1 male, 6-XI-58; U.S.F.H.

#### ABLABESMYIA ILLINOENSIS (Malloch)

*Tanytus illinoensis* Malloch, 1915a: 376, description of pupa and adult.  
*Tanytus illinoensis* Malloch; Walley, 1925: 272, adult, in key; 1928: 585, 589, adult, in key; distribution.  
*Pentaneura illinoensis* (Malloch); Johannsen, 1937a: 12, redescription of pupa.  
*Pentaneura illinoensis* (Malloch); Miller, 1941: 19, and following pages; ecology.  
*Pentaneura illinoensis* (Malloch); Hauber, 1945: 496, adult, in key.  
*Pentaneura illinoensis* (Malloch); Johannsen, 1946: 270, 273, adult.  
*Pentaneura illinoensis* (Malloch); Johannsen (in Johannsen and Townes), 1952: 6, adult, in key.  
*Pentaneura illinoensis* (Malloch); Paine and Gaufin, 1956: 295, ecology.  
*Pentaneura illinoensis* (Malloch); Judd, 1957: 399, phenology.  
*Pentaneura illinoensis* (Malloch); Beck and Beck, 1959: 90, distribution of adult.  
*Pentaneura* (*Ablabesmyia*) *illinoensis* (Malloch); Dendy and Sublette, 1959: 508, adult, in key.  
*Pentaneura* (*Ablabesmyia*) *illinoensis* (Malloch); Roback, 1959: 121, redescription of adult.

Males: Wing length 2.48-3.02, mean 2.75 mm (4); foreleg ratio 0.76-0.83, mean 0.79 (4); antennal ratio 2.20-2.52, mean 2.31 (3); fore tibial band 0.54; basitarsal band 0.38.

Material examined: One female, 12-III-57; 2 males, 16-III-57; 1 female, 5-IV-57; 1 male, 8-IV-57; 1 male, 6-V-57; 1 male, 1 female, 21-V-57; 1 female, 16-VII-57; light trap, Natchitoches, La. One male, 2 females, 15-X-58; 1 male, 6-XI-58; U.S.F.H.

## ABLABESMYIA RHAMPHE

new species

*Pentaneura basalis* Walley?; Sublette, 1957: 38, larval ecology; misidentification of *basalis* Walley.

?*Tanytus* sp. A, Malloch, 1915a: 397, larva.

Holotype male: U.S.N.M., No. 66454, collected at light, Natchitoches, Louisiana, 16-VI-57, by James E. Sublette.

Postocular bristles partially in two rows; palpal proportions 20:20:20:42 (paratype); antennal ratio 2.00. Head, including antennal pedicels, and thorax dark brown overlain with a conspicuous greenish pruinescence; prescutellum shining; halteres pale. Wing length 1.89 mm; venarum ratio 0.78; prothorax with about 12 fine lateral bristles; supra-alar bristles 2; prealar bristles, 1 row staggered, becoming 2 rows and dividing around prescutellar area to join dorsolateral bristles where the row then appears doubled back to scutellum. Scutellar bristles about 40, 12 of which are large and erect, forming a straight transverse row, the remainder more or less strewn anteriorly. Dorsolateral bristles in one row. Anterolateral bristles 12.

Fore tarsus not bearded; legs banded; white bands of legs wider than narrow brown bands which they separate; middle brown band of fore tibia about equidistant between basal and apical bands (0.53); fore femur with a broad basal brown band and a narrow apical one; mid and hind femora with only the apical one; remainder of segments on all legs banded as follows: tibia with three bands; basitarsus with one band slightly before center (0.40) and one at apex;  $Ta_2$  to  $Ta_1$ , each with an apical band only;  $Ta_5$  entirely dark. Tibial spur length and ratio of spur length to diameter of apex of tibia: foreleg, 0.03 mm, 8:8; middle leg, 0.04 mm, 9:8; hind leg, 0.04 mm, 10:9.

Leg proportions:

	F	Ti	Ta <sub>1</sub>	2	3	4	5	Leg ratio
Foreleg	42	50	40	28	19	12	7	0.80
Middle leg	45	43	38	20	15	9	8	0.88*
Hind leg	43	55	49	27	19	11	6	0.89

\* (paratype)

Wings patterned very much like *aspera* Roback (cf. Roback, 1959, pl. XIV, figure 1) except that the spots are heavier and broader and with those under  $R_{2+3}$ , sub-basal in M, at end of  $Cu_1$  and in cell  $Cu_1$  confluent at edges.

Tergite 1 of abdomen largely pale, tergites II-V with an anterior brown transverse

fascia, which occupies one-half of segment II becoming wider posteriorly; tergites VI-VII almost entirely dark; genitalia dark.

The basistyle of the genitalia has a conspicuous outward bulge which led me (1957) to identify this species as *basalis*?. At that time I observed that the species differed from *basalis* in some particulars, hence the query. The genitalia most closely resemble *johannseni* Roback but differ significantly in lacking serrations along the accessory blade (Fig. 5, aedeagus in normal position; Fig. 6, everted position).

Allotype: In U. S. National Museum; collected in a tent trap, C.R.L., Natchitoches Parish, Louisiana, 10-VII-57; B. R. Buckley.

Colored as male. Antennal flagellum pale except terminal segment which is dark and bears a terminal bristle; proportions of segments: 13:6:6:6:7:7:6:6:6:8:19 (paratype). Ratio of last segment to remainder, 0.26. Postocular bristles in 2 rows. Palpal proportions 13:15:13:30. Clypeus densely haired with about 45-50 bristles.

Prothorax with 14 fine lateral bristles. Wing length 1.58 mm; supra-alar bristles 2; prealar bristles 25; dorsomedial and dorsolateral bristles as in male; anterolateral bristles 25.

Leg proportions:

	F	Ti	Ta <sub>1</sub>	2	3	4	5	Leg ratio
Foreleg	35	42	35	20	15	10	5	0.83
Middle leg	45	40	36	20	13	9	5	0.90
Hind leg	40	50	-	-	-	-	-	0.85*

\* (paratype)

Wings heavily haired; wing spots more diffuse and coalesced than in male.

Abdomen fasciate, the bands becoming progressively broader posteriorly. Genitalia with very small lamellae (Fig. 7); 3 spermathecae, large and oval; blackish-brown except at junction of duct (Fig. 8).

The species keys in Roback (1959, p. 120) to couplet 6 where it can be distinguished from *janta* Roback by lacking a brush and from *johannseni* Roback by lacking serrations.

Paratypes: Wing length 1.62-2.12, mean 1.85 mm (9); leg ratio 0.76-0.85, mean 0.81 (4); antennal ratio 1.96-2.35, mean 2.16 (7).

Paratypes examined. One male, 3-IV-57; 1 male, 16-VI-57; 1 male, 25-VI-57; 2 males, 10-VII-57; 1 male, 11-VII-57; 1 male, 18-VII-57; 2 males, 2 females, 23-VII-57; 1

male, 25-VII-57; 1 male, 1 female, 26-VII-57; 1 female, 27-VII-57; 2 females, 29-VII-57; 2 males, 1 female, 30-VII-57; 1 male, 6-VIII-57; 1 male, 1 female, 13-VIII-57; 1 male, 17-IX-57; 1 male, 14-X-57; 1 male, 12-V-58; 1 male, 4-VI-58; C.R.L. One male, 4 females, 28-VI-57; light trap, Natchitoches, La. Five males, 14-VI-62; University of Oklahoma Biological Station, Willis, Oklahoma. In the collections of U.S.N.M., Cornell University, I.N.H.S., A.N.S.P., C.N.C., and Florida State Board of Health.

Larva: Described from exuvia of reared specimen. Head length 0.72 mm; width, 0.44 mm. Mandible (Fig. 9) length 0.12 mm; mandible:head length 0.17. Antenna (Fig. 10) length 0.38 mm; antenna:head length 0.52. Head entirely yellow except for lingula (Fig. 11) and posterior margin of occiput. Maxillary palpus, Figure 12.

Posterior prolegs each with two dark curved hooked claws; with one brown hooked claw; and with 12 slightly curved yellow claws. Preanal papilla about 0.41 as wide as long; each with 7 bristles.

The larva keys in Roback (1957c) to couplet 11 of the key to *Pentaneura* (page 29). It may be distinguished from *peleensis* Walley by having a lower antennal ratio (about 4.5:1) and from *monilis* (Linné) Johannsen (= *americana* Fittkau) by the basal two maxillary palpal segments being subequal.

Pupa: Described from exuvia of reared female and from male pupa with visible genitalia. Pupa length 4.05 mm; exuviae length 3.33 mm. Entirely pale yellow except for dark respiratory organs (Fig. 13) which are 0.36 mm long. Seventh segment with 4 lateral flattened filaments which have the following positions in terms of distance from the anterior margin of the segment: first, 0.41; second, 0.56; third, 0.75; fourth, 0.96. Eighth segment with 5 lateral flattened filaments which have the following positions in terms of distance from the anterior margin: first, 0.28; second, 0.49; third, 0.70; fourth, 0.85; fifth, 1.00. Swim fin, Figure 14.

The pupa keys in Roback (op. cit.) to couplet 11 then no longer fits the key well; it appears to be distinctive in the structure of the respiratory organ (Fig. 13).

#### SUBFAMILY ORTHOCLADIINAE

##### CRICOTOPUS BICINCTUS (Meigen)

*Chironomus bicinctus* Meigen, 1818: 41, description of adult.

*Cricotopus bicinctus* (Meigen); Johannsen, 1905: 256, redescription of adult after van der Wulp, 1874: 132.

*Trichocladius aterimannus* Kieffer; Potthast, 1915: 243, description of immature stages.

*Cricotopus bicinctus* (Meigen); Malloch, 1915a: 505, redescription of adult; distribution.

*Cricotopus bicinctus* (Meigen); Edwards, 1929: 321, redescription of adult; synonymy.

*Cricotopus bicinctus* (Meigen); Goetghebuer, 1932: 29, 34, description of adult; distribution.

*Cricotopus bicinctus* (Meigen); Tokunaga, 1936: 16, redescription of adult.

*Cricotopus bicinctus* (Meigen); Johannsen, 1937a: 54, redescription of immature stages.

*Cricotopus bicinctus* (Meigen); Miller, 1941: 19, and following pages, ecology.

*Trichocladius bicinctus* (Meigen); Brundin, 1949: 461, 497, 498, 506, 728; ecology; distribution.

*Cricotopus bicinctus* (Meigen); Johannsen (in Johannsen and Townes), 1952: 18, adult, in key.

*Trichocladius bicinctus* (Meigen); Thieneman, 1954: 184, 191, 259, 266, 267, 287, 322, 349, 350, 360, 367, 369, 370, 456, 459, 461, 468, 477, 502, 505, 511, 525, 592; biology.

*Cricotopus bicinctus* (Meigen); Paine and Gaufin, 1956: 295, ecology.

*Cricotopus bicinctus* (Meigen); Judd, 1957: 400, phenology.

*Cricotopus bicinctus* (Meigen); Mundie, 1957: 164, ecology.

*Cricotopus bicinctus* (Meigen); Roback, 1957c: 71, redescription of larva; distribution.

*Cricotopus bicinctus* (Meigen); Gaufin, 1958: 205, ecology.

*Cricotopus bicinctus* (Meigen); Beck and Beck, 1959: 91, distribution of adults.

*Cricotopus bicinctus* (Meigen); Surber, 1959: 111, ecology.

*Cricotopus bicinctus* (Meigen); Judd, 1960: 207, phenology.

Males: Wing length 1.58-1.94, mean 1.71 mm (3); leg ratio 0.53-0.63, mean 0.57 (3); antennal ratio 1.41, 1.52 (2).

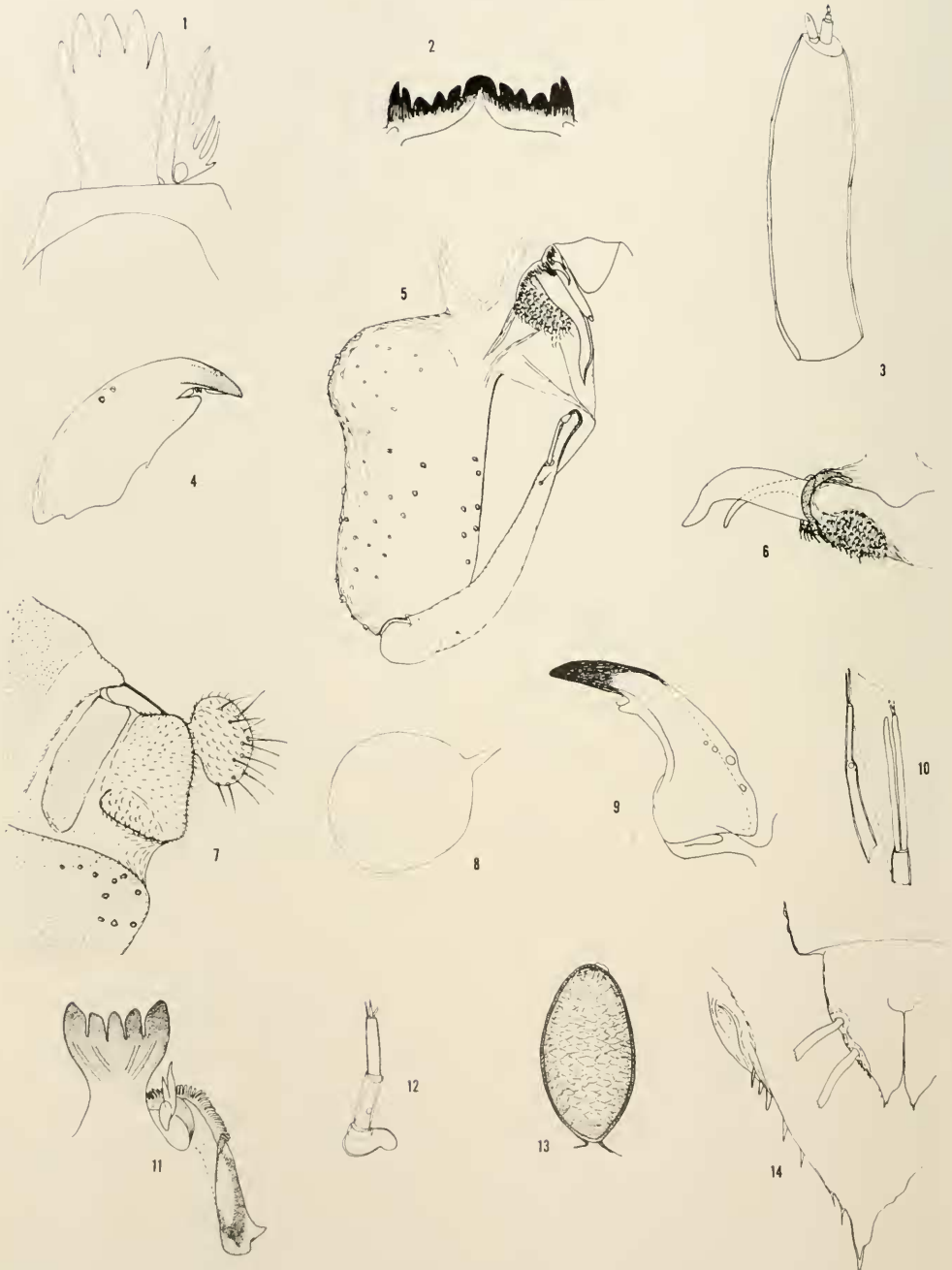
Material examined: One male, 3-III-57; 3 females, 6-V-57; at light, Natchitoches, La. One male, 21-IV-58; 1 male, 5-V-58; C.R.L.

##### CRICOTOPUS REMUS new species

*Cricotopus tricinctus* (Meigen); Sublette, 1957: 384, ecology; phenology; misidentification of *tricinctus* (Meigen). Occurrence of *tricinctus* in the Nearctic region is doubtful.

Holotype male: U.S.N.M. No. 66455; collected in a funnel trap set in 0.5 meters of water, C.R.L., Natchitoches Parish, Louisiana, 21-IV-58, B. R. Buckley.

Antennal pedicel dark brown, antennal flagellum pale brown; postocular bristles in a single staggered row; proportions of palpal



Figures 1-4. *Tanypus* n. sp. 2. 1. lingula and supralingula of larva; 2. labium; 3. antenna; 4. mandible. Figures 5-14. *Ablabesmyia ramphe* new species. 5. male genitalia, aedeagus in normal position; 6. aedeagus in everted position; 7. female genitalia; 8. spermatheca; 9. mandible of larva; 10. antenna; 11. lingula; 12. maxillary palpus; 13. pupal respiratory organs; 14. swim fin.



segments, 5:7:12:20; antennal ratio 1.27.

Prothorax entirely yellow; broad, almost parallel-sided, with 3 fine lateral bristles. Mesothorax ground color yellow separated by the dark brown vittae; prescutellum yellow; scutellum brown; postnotum dark brown; sternopleuron blackish-brown on venter; halteres pale. Wing length 1.69 mm; prealar bristles 4, 2 large ones posteriorly, 2 small ones anteriorly; dorsomedial and dorsolateral bristles minute, suberect; scutellar bristles 2, large, erect.

Forelegs with femur dark on distal one-third; tibia on basal one-third, and distal one-tenth; tarsi entirely dark. Middle legs with femur dark on distal one-third; tibia, basal one-third; basitarsus largely pale, second tarsal joint dark on distal one-third. Hind legs with femur dark on distal one-third; tibia, basal one-sixth; tarsal joints 1 and 2 pale; 3 dark only on distal one-fourth, 4 and 5 entirely dark. Single long slender spur on fore tibia 1.23 times as long as apical diameter of tibia. Spurs of middle tibia very short, of equal length. Hind leg with inner spur 2.25 times length of outer; tibial comb with 18 bristles; row tapered toward center.

Leg proportions:

	F	Ti	Ta <sub>1</sub>	2	3	4	5	Leg ratio
Foreleg	77	100	50	30	20	13	10	0.50
Middle leg	76	80	35	20	15	10	10	0.44
Hind leg	80	92	47	25	20	11	11	0.51

Wings: C slightly produced; R<sub>4+5</sub> terminates proximal to M; f-Cu distal to r-m; An reaches middle of Cu<sub>2</sub>.

Abdomen illustrated in Figure 15.

Genitalia illustrated in Figure 16. The broad spatulate dististyle is distinctive among American *Cricotopus*.

Allotype: In U. S. National Museum. Collected C.R.L., 4-VI-58, B. R. Buckley.

Antennal proportions, 11:7:6:6:17. Ratio of terminal segment to remainder, 0.71. Palpal proportions, 8:12:15:26. Wing length 1.33 mm.

Leg proportions:

	F	Ti	Ta <sub>1</sub>	2	3	4	5	Leg ratio
Foreleg	55	70	30	—	—	—	—	0.43
Middle leg	60	55	29	12	10	7	9	0.53
Hind leg	55	65	32	15	14	7	9	0.50

Abdomen similar to male except for sexual differences. Color pattern less intense

than male so that dark bands are incomplete on all segments leaving a pale fascia anterior and posterior to each main dark fascia; entire abdomen appearing thus vittate. Spermatheca (Fig. 17); genitalia (Fig. 18).

Paratypes: Wing length 1.46-1.58, mean 1.54 mm (3); foreleg ratio 0.48-0.53, mean 0.51 (3); middle leg ratio 0.39-0.41, mean 0.40 (3); hind leg ratio 0.50-0.52, mean 0.51 (3); antennal ratio 1.20-1.33, mean 1.28 (3).

Paratypes examined: One female, 2-II-57; 1 female, 7-II-57; 2 females, 12-IV-57; 1 female, 16-IV-57; 2 males, 2 females, 29-IV-57; 4 females, 6-V-57; 1 male, 2 females, 21-V-57; 1 male, 3-VI-57; 4 males, 6 females, 14-IV-58; 12 males, 27 females, 21-IV-58; 1 male, 5 females, 5-V-58; 1 male, 3 females, 30-IV-58; at light, Natchitoches, La. In the collections of U.S.N.M., C.N.C., A.N.S.P., I.N.H.S., Cornell University and the Florida State Board of Health.

This species keys in Johannsen (in Johannsen and Townes, 1952) to *trifasciatus* (Panzer) or *tricinctus* (Meigen) depending upon the degree to which the femora are infusate. Neither of these Palearctic species has been adequately described and separation of the species has been entirely on color characteristics (cf. Edwards, 1929, page 319). Edwards (op. cit.) describes both species as having abdominal segments 1, 4 and 7 mostly yellow; only the posterior margin of *remus* is yellow. The species *tricinctus* is described as having tergites, 2, 3, and 5 entirely black, while *trifasciatus* has 2, 3, and 5 narrowly yellow at base. In *remus* new species 2 and 5 are narrowly yellow but 3 is entirely dark.

Larva: Described from exuvia of paratype male. Head, yellowish-brown; only occiput, labial plate, tips of mandibles and premandibles darker brown; head length 0.53 mm. Labial plate (Fig. 19) and mandible (Fig. 20) very similar to that figured by Johannsen (1937) for *Cricotopus trifasciatus* (Panzer). Antenna (Fig. 21) 0.08 mm long. Mandible 0.16 mm long. In addition to the bristles shown posterior to the labial plate, the venter of the head bears two pairs of closely spaced bristles; one pair lateral to the last tooth of the labial plate and about one-third the width of the plate from the last tooth; the other pair almost at the middle of the head near the lateral margin. In

each set the two bristle alveoli are contiguous. Venter of labrum and epipharyngeal area of typical pattern (cf. Fig. 37 for terminology which follows): near the anterior margin are two strong bristles; seta III, flanked on either side by shorter bristles; posterior to seta III and slightly medial are two strong bifurcate bristles, seta II; lateral to these on each side is a dense clump of 10 to 12 moderately strong bristles, the chaetae. The pecten epipharyngis is formed from three large, triangular, blunt teeth; below these on each side are three long slender teeth, the chaetulae basales. Premandible (torma) bifurcate, yellowish-brown at tips.

The body bears characteristic hair pencils (Johannsen, 1937a, Pl. XV, figure I84). The preanal papillae are about as long as broad, each is blackish-brown on posterior face; on the anterior surface is a fine, pale bristle; each papilla bears six long yellowish-brown terminal bristles. Posterior prolegs with 14-16 slender, gently curved hooks.

Pupa: Described from exuvia of paratype male. Exuvia length 4.13 mm; pale yellowish, slightly darker on lateral margin of last three segments. Respiratory organs (Fig. 22) gradually tapering, 0.24 mm long, without spinules, slightly darker than remainder of integument. Anterior to respiratory organs are three bristles, two anterior large ones and a much smaller posterior one. Dorsum of thorax strongly papillose. Abdominal chaetotaxy very similar to other species of *Cricotopus*. Tergites III to VI with a more or less continuous field of coarse shagreen; intertergal membrane between III and IV, IV and V, and V and VI, with fine shagreen in multiple rows. Tergites VII and VIII not shagreened. Anal lobes with three short, heavy, almost straight bristles. Posterolateral margins of sternites IV-VII with a patch of spinules; sternites IV-VIII with sparse fine shagreen which becomes progressively denser towards posterior segments so that sternites VII and VIII are almost completely shagreened.

The larva keys in Roback (1957c, pages 68, 69) to couplet 8, where it cannot be distinguished from *C. sylvestris*, *trifasciatus*, or *tricinctus* because of inadequate descriptions.

The pupa keys to couplet 11 (loc. cit., page 70) where, as in the larval stage, it cannot be distinguished from *C. trifasciatus*, *sylvestris*, or *tricinctus* due to inadequacies of descriptions of those species.

### CRICOTOPUS LEBETIS new species

*Cricotopus tricinctus* (Meigen), American authors, in part.

Holotype male: U.S.N.M., No. 66456. Collected at U. S. Fish Hatchery, Natchitoches, Louisiana, 29-X-58, Robert F. Tyler.

Head, thoracic vittae, sternopleuron, scutellum, postnotum and abdominal tergites II, III, V, VI and VIII blackish-brown; pronotum, narrow mesothoracic ground color and abdominal tergites I, IV and VII yellowish. Antennae and mouth parts blackish. Halteres pale. Coxa of foreleg pale, that of middle and hind leg black; trochanters of all legs yellowish; all femora dark brown becoming still darker apically; fore tibia dark brown basally and apically, paler brown in the middle; middle and hind tibiae darkened apically and basally, infusate white in the middle; fore tarsi entirely dark; middle tarsi paler brown; hind tarsi paler brown. Fore tarsi with hairs no more than 2 times tarsal diameter. Empodium as long as claws; pulvilli minute (clearly visible only at 430 magnification). Fore tibia with a single spur; middle tibia with two short subequal spurs; hind tibia with the usual comb and with two spurs, of which the outer is about one-half the length of the inner. Ratio of spur length to diameter of tibia: foreleg, 8:8, middle leg, 3:8; hind leg (inner spur), 8:9.

Prothorax broad, almost parallel-sided to the apex where it projects slightly; halves distinctly notched; lateral margin with about 8 fine bristles. Wing length 1.62 mm; no supra-alar bristles; 2 prealar bristles; dorso-medial and dorsolateral bristles minute, in a single row, depressed; scutellar bristles 8, moderate sized, erect. Chaetotaxy of abdominal tergite II shown in Figure 25.

Leg proportions:

	F	Ti	Ta <sub>1</sub>	2	3	4	5	Leg ratio
Foreleg	32	43	22	11	9	6	5	0.51
Middle leg	38	38	17	10	7	5	5	0.45
Hind leg	37	45	25	12	10	6	5	0.56

Wing structure appears to be the same as the allotype.

Genitalia, Figure 23. The strong, almost right angled basal lobe on the basistyle as well as the shape of the dististyle seem distinctive; dististyle in dorsal view, Figure 24.

Allotype: In the U. S. National Museum Collection. Collected at light, Natchitoches, Louisiana, 6-V-57.

Colored as the holotype male except that the dark areas are more intense; thoracic vitæ fused completely so that mesothorax is almost solid black; pronotum also infuscate. Abdomen colored as male. Eyes reniform, more abbreviate dorsally. Legs dark, vittate appearance not discernible. Palpal proportions, 7:16:16:22; wing length 2.48 mm; venarum ratio 1.17; 4 prealar bristles; dorso-medial bristles apparently in a single row; dorsolateral bristles in a rather broad staggered row; scutellum with about 10 bristles in a slightly staggered row. Antennal proportions 12:8:8:8:22; ratio of terminal segment to remainder, 0.41.

Leg proportions:

	F	Ti	Ta <sub>1</sub>	2	3	4	5	Leg ratio
Foreleg	40	47	25	15	11	8	5	0.53
Middle leg	38	40	19	11	8	5	5	0.47
Hind leg	35	43	24	12	10	6	5	0.56

Wing membrane greyish-brown by transmitted light, veins dark brown. C produced beyond R<sub>4+5</sub>, terminating proximal to M and distal to Cu<sub>1</sub>. R<sub>2+3</sub> terminates at about the middle of the ends of R<sub>1</sub> and R<sub>4+5</sub>. The anal vein terminates beyond f-Cu.

Genital lamella, Figure 26.

Paratype males: Wing length 1.31-1.44, mean 1.40 mm (3); leg ratio 0.51-0.52, mean 0.52 (3); antennal ratio 0.86-1.09, mean 0.97 (3).

Paratypes: One male, 6-IX-58; 3 males, 12-IX-58; 1 male, 4-X-58; 7 males, 29-X-58; 5 males, 6-XI-58; 1 male, 10-XI-58; 2 males, 27-XI-58; 3 males, 12-XII-58; 3 males, 10-I-59; U.S.F.H. In the collections of C.N.C., A.N.S.P., I.N.H.S., and Cornell University.

This species keys in Johannsen (in Johannsen and Townes), 1952, to *tricinctus* Meigen. Separation of *lebetis* from Palearctic material on the basis of color patterns is difficult. The genitalia as figured by Tokunaga (1936) is distinctively different.

## PSECTROCLADIUS VERNALIS

Malloch

*Psectrocladius vernalis* Malloch, 1915a: 520, description of adult.

*Psectrocladius vernalis* Malloch; Dendy and Sublette, 1959: 513, added description of adult.

Males: Wing length 1.71-2.25, mean 1.87 mm (5); leg ratio 0.67-0.70, mean 0.69 (5); antennal ratio 1.00-1.26, mean 1.13 (5).

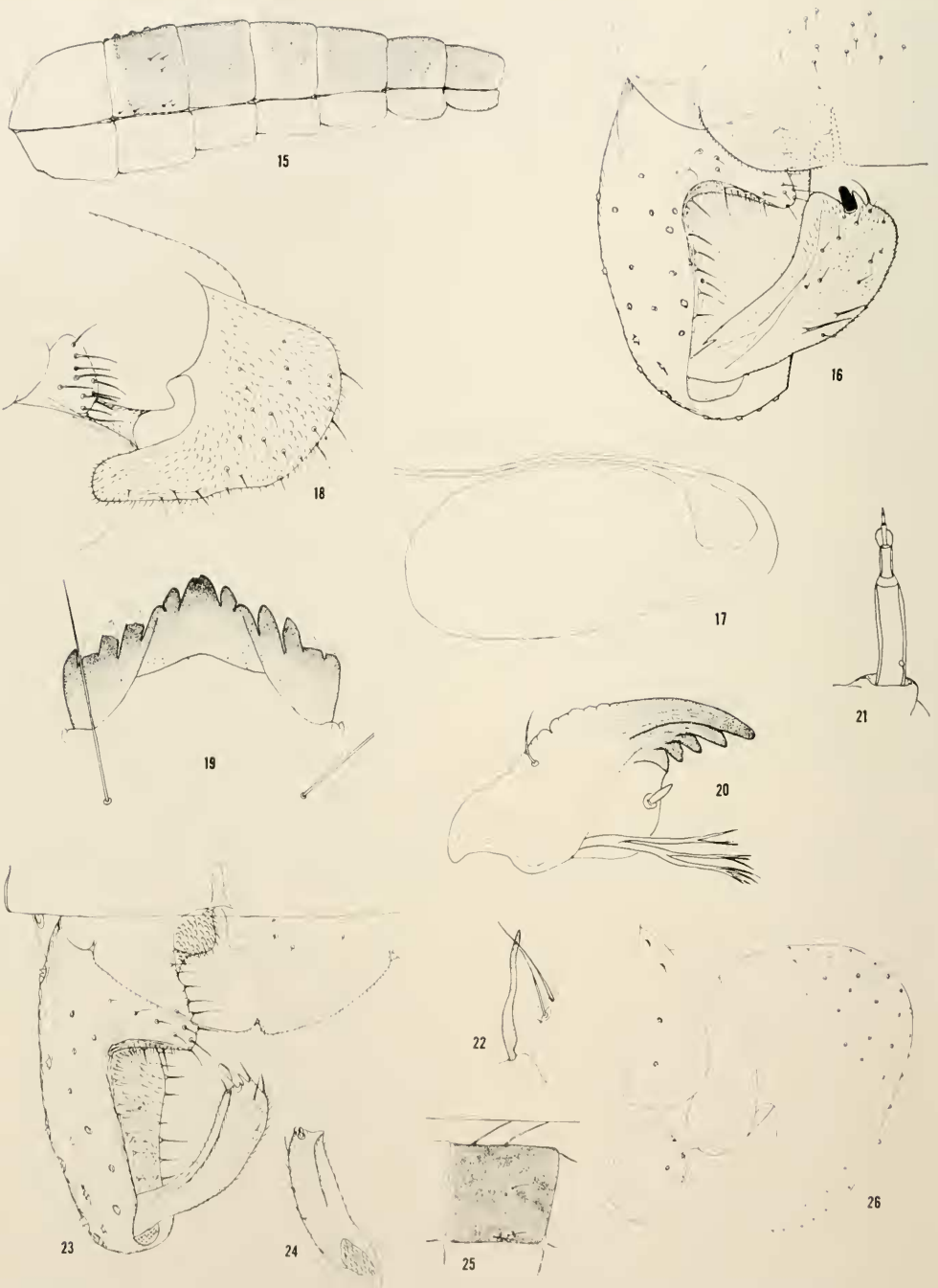
Material examined: One male, 4-X-58; 1 male, 10-X-58; 2 males, 15-X-58; 7 males, 29-X-58; 41 males, 6-XI-58; 1 male, 26-XI-58; 2 males, 27-XI-58; 109 males, 12-XII-58; 2 males, 10-I-59; 1 male, 15-I-59; 8 males, 25-I-59; 6 males, 5-II-59; 2 males, 9-II-59; 9 males, 15-II-59; U.S.F.H. One male, 3-II-57; 1 male, 5-II-57; 1 male, 6-II-57; C.R.L., on *Typha*. One male, 3-III-58; 1 mile south of Farmersville, La., borrow ditch.

Larva: Described from exuvia of reared male. Head length, 0.50 mm; head capsule pale yellow except for tips of mandibles and labial plate which is dark brown and occiput which is dark yellow. Labial plate, Figure 27; mandible, Figure 28; antenna, Figure 29; ventral surface of labrum somewhat obscured; epipharyngeal apparatus, Figure 30; Sm apparently absent; seta I palmate deeply and coarsely incised; seta II, simple, slightly anterior and lateral to seta I; seta III, small and simple, medial to seta II; about 8 chaetae; torma (premandible), Figure 31; maxilla with about 8 long medial blades; palpus about as long as wide; with about 8-10 low pointed scales medial to the palpus. Posterior end of exuvia lost.

The larva does not fit well into Roback's key (1957c, page 86), the most comprehensive treatment of Nearctic species. The labial plate resembles that of the Palearctic species *stratiotis* Kieffer (Goetghebuer, 1914, vide Roback, op. cit.) but differs in having the medial teeth distinctly less projecting.

Pupa: Described from exuvia of reared male. Length 4.5 mm. Entirely pale yellow; respiratory organs darker (Fig. 32). Cephalic tubercles low conical, each with a terminal seta. Tergites II-VI with a posterior transverse band of coarse spines and spinulae; tergites IV-VI with a central disc of coarse spines, consisting of 7 spines on IV, 13 spines of V, and 13 spines of VI. Tergite IV is shown in Figure 33. Segments VI and VII have 4 lateral flattened bristles, 2 anterior and 2 posterior; segment VII has 5 flattened bristles, 2 anterior and 3 posterior. Swim fin with about 28 fringe bristles and, in addition, 3 heavy, posteriorly directed spines. No intersegmental spinulae.

The pupa keys to *elatus* Roback in Roback's key (op. cit., page 87). It may be distinguished by the structure of the respir-



**Figures 15-22. *Cricotopus remus* new species.** 15. color pattern of male abdomen, lateral view; 16. male genitalia; 17. spermatheca of female; 18. genitalia of female; 19. labial plate of larva; 20. mandible; 21. antenna; 22. respiratory organ of pupa. **Figures 23-26. *Cricotopus lebetis* new species.** 23. male genitalia; 24. dististyle of male genitalia, dorsal view; 25. second tergite of male abdomen, lateral view; 26. female genitalia, microtrichiae omitted.

atory organ (compare Fig. 32 and Roback's figure 244).

## NANOCLADIUS ALTERNANTHERAE

Dendy and Sublette

*Nanocladius alternantherae* Dendy and Sublette, 1959: 510, description of larva, pupa and adult; ecology, phenology.

To the original description should be added: eyes hairy; postocular bristles two, dorsolateral to the eyes; dorsomedial bristles two, rather short and heavy, on a very slight mesonotal tubercle; middle tibia with two spines, the inner slightly shorter than the outer (in the original description the outer mesotibial spur apparently was obscured or missing); small pulvilli present; scutellum with four bristles.

As Freeman (1961) pointed out, his earlier (1954) synonymy of *Nanocladius* was too broad. I consider his synonymy of *Microcricotopus* with *Nanocladius* to be valid but the other genera which he synonymized not so. The valid genera then appear to be (after Brundin, 1956): *Nanocladius* Kieffer (synonym *Microcricotopus* Thienemann and Harnisch); *Eukiefferiella* Thienemann (synonym *Akiefferiella* Thienemann); *Parakiefferiella* (Thienemann) Brundin; *Krenosmittia* Thienemann (synonym *Campatokiefferiella* Goetghebuer).

The two other Nearctic species *sordens* Johannsen and *brevinervis* Malloch, provisionally placed in *Nanocladius* by Dendy and Sublette (1959), do not appear to belong here in the restricted genus. The position of *brevinervis* most probably is in *Eukiefferiella*, while that of *sordens* is uncertain. Johannsen's very brief original description did not mention hairy eyes so possibly this is also a species of *Eukiefferiella* in its restricted sense. A reexamination of the type will be needed before a positive placement can be given.

Material examined: Two females, 2-II-57; 2 females, 6-II-57; 1 male, 6-V-57; 1 male, 25-VI-57; 2 females, 2-VII-57; 1 female, 9-VII-57; 1 male, 11-VII-57; 1 male, 27-VII-57; 1 male, 30-VII-57; 5 males, 8 females, 24-IX-57; 1 male, 30-IX-57; 1 male, 1-X-57; 1 male, 29-X-57; 1 female, 11-XI-57; 2 males, 25-XI-57; 1 male, 1 female, 2-XII-57; 1 female, 23-XII-57; 1 male, 28-I-58; C.R.L. One female, 25-VII-56; Ch.L.

## SUBFAMILY CHIRONOMINAE

### Tribe Chironomini

## PSEUDOCHIRONOMUS AIX Townes

*Pseudochironomus aix* Townes, 1945: 19, description of adult.

*Pseudochironomus aix* Townes; Beck and Beck, 1959: 92, distribution; phenology.

Immature stages were reared from specimens collected on alligator weed (*Alternanthera philoxeroides* (Mart.) Standl.).

Larva: Head pale except for brownish teeth of labial plate and mandible; gular area yellowish. Head capsule length 0.53 mm. Labial plate (Fig. 34) very similar to that figured for *Tanytarsus* (sens. lat.) sp. J (Johannsen, 1937a) (?=*Pseudochironomus pseudoviridis* (Malloch), cf. Sublette, 1957) and *fulviventris* (Johannsen) (cf. Hauber, 1947). Mandible (Fig. 35) also very similar to the two species mentioned. Maxilla, epipharyngeal apparatus, and antenna are shown in Figures 36, 37 and 38. Preanal tubercles more or less quadrate, about as high as wide. Each supports 9 long yellowish bristles. On the anterior face of each tubercle are 2 fine bristles while the membrane posterior and inferior to the tubercle supports one longer, heavier bristle. Anal legs each with about 14 strongly hooked, yellowish claws.

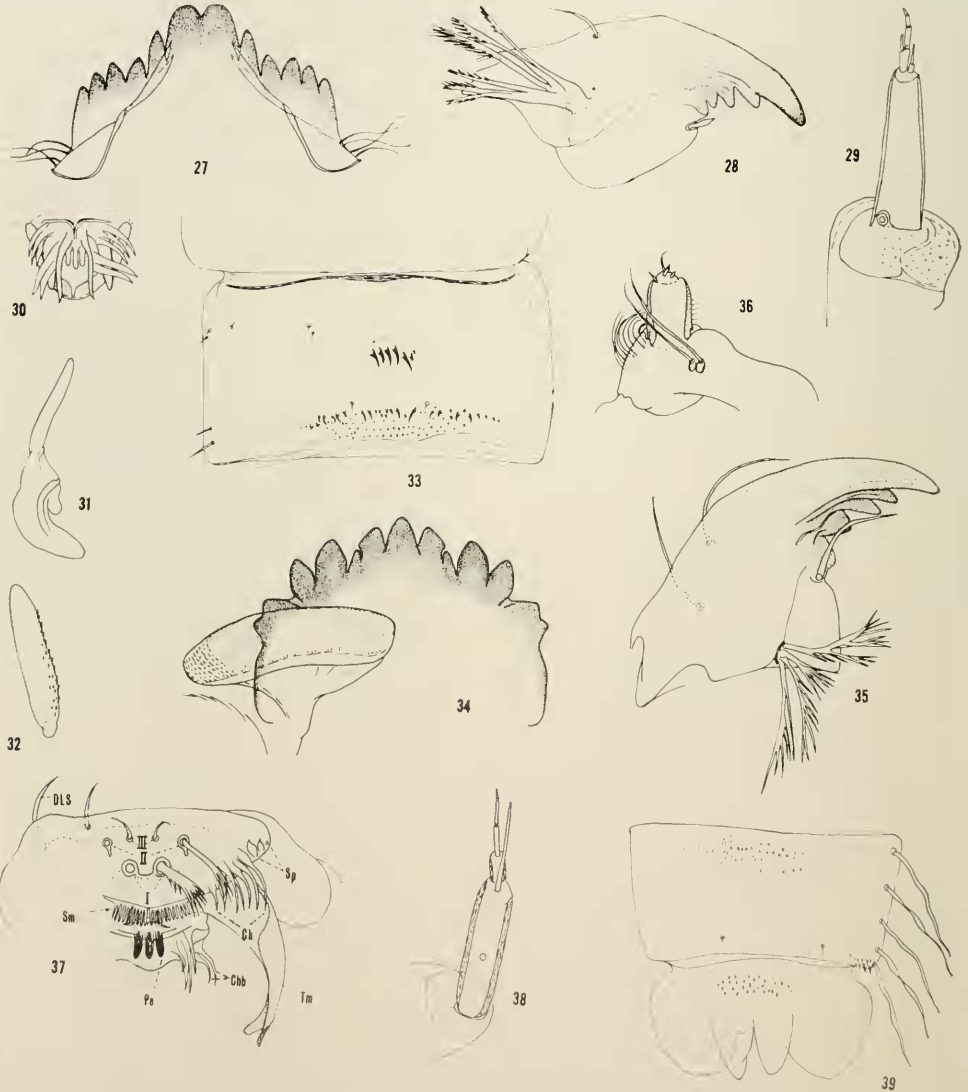
Pupal exuvia: Length 4.44 mm. Thorax yellowish-brown, somewhat papillose on dorsal surface; low spinules on either side of anterior margin of raphe. Respiratory organs not discernible.

Tergal chaetotaxy of abdomen as follows: Segment I, devoid of spinules. Segment II, with a transverse band of shagreen towards the anterior margin; posteriorly there is a less definite triangular band of finer shagreen; along the midline the two bands are joined by fine shagreen. At the posterior margin is the usual heavy band of blackish upturned hooks, which is made up of 95 hooks in an even straight row. Segment III, similar to II, with an anterior definite band joined to a fainter posterior area of shagreen. Intersegmental membrane with a few fine black spinulae. Segment IV, similar to III but with the tergal surface behind the anterior band almost uniformly and finely shagreened. Intersegmental membrane between IV and V with several rows of blackish spinulae. Segment V, anterior band composed of a lateral area of heavy shagreen,

joined across middle by fine shagreen; posterior half of tergite finely shagreened except for bare lateral areas; margin of segment with 3 large flattened bristles, 2 close together near anterior one-fourth and the third beyond the middle. Segment VI, as V except spinulae less dense and posterior area narrower, leaving wider marginal clear areas;

lateral bristles as V. Segments VII and VIII, with an anterior band only (Tergite VIII, Fig. 39). The lateral bristles of VII as the preceding two segments. Segment IX, central part of disc with a band of coarse spinulae (Fig. 39); swim fin with a fringe of 37 to 40 bristles.

Males: Wing length 1.66-2.18, mean 1.91



**Figures 27-33. *Psectrocladius vernalis* Malloch.** 27. labial plate of larva; 28. mandible; 29. antenna; 30. epipharyngeal apparatus; 31. tormia (premandible); 32. pupal respiratory organ; 33. fourth abdominal tergite of pupa. **Figures 34-39. *Pseudochironomus aix* Townes.** 34. labial plate of larva; 35. mandible; 36. maxilla; 37. epipharyngeal apparatus—abbreviations as follows: Pe = pecten epipharyngis Chb = chaetulae basales Tm = tormia (= premandible) Ch = chaetae Sm = squama platia I = seta I II = seta II III = seta III Sp = spinulae DLS = dorsal labral setae; 38. antenna; 39. tergite VIII of pupa, and anal fin.

mm (10); leg ratio 0.84-0.93, mean 0.89 (10); antennal ratio 2.00-2.47, mean 2.22 (8).

Material examined: One female, 11-VII-57; 1 male, 29-VIII-57; 1 male, 1 female, 3-IX-57; 1 male, 10-IX-57; 1 female, 14-X-57; 1 female, 21-X-57; 1 male, 7-IV-58; 1 female, 30-IV-58; 4 males, 4 females, 5-V-58; 3 males, 6 females, 12-V-58; 3 males, 2 females, 4-VI-58; 3 males, 3 females, 6-VI-58; 3 males, 3 females, 19-VI-58; 3 females, 2-VII-58; on alligator weed, C.R.L.

#### CHIRONOMUS (CHIRONOMUS) STIGMATERUS Say

*Chironomus stigmaterus* Say, 1823: 15, description of adults.

*Tendipes (Tendipes) stigmaterus* (Say); Townes, 1945: 120, added description of adult; distribution and phenology.

*Chironomus (Chironomus) stigmaterus* Say; Beck and Beck, 1959: 94, distribution and phenology of adults.

*Tendipes (Tendipes) stigmaterus* (Say); Sublette, 1960: 211, adults.

Males: Wing length 4.55, 4.95 mm (2); leg ratio 1.44 (1); antennal ratio 4.55, 5.00 (2).

Material examined: One pupal exuvia, 10-X-58; 1 male, 1 female, 27-XI-58; 1 pupal exuvia, 12-XII-58; 1 pupal exuvia, 25-I-59; 1 pupal exuvia, 15-II-59; U.S.F.H. One male, 14-V-57; at light, Natchitoches, La.

#### CHIRONOMUS (CHIRONOMUS) ATTENUATUS Walker

*Chironomus attenuatus* Walker, 1848: 20, description of adult.

*Tendipes (Tendipes) decorus* (Johannsen) Townes, 1945: 20, adults.

*Tendipes decorus* [(Johannsen)]; Gerry, 1951: 241-244, ecology; control.

*Tendipes (Tendipes) decorus* (Johannsen); Roback, 1953: 129, ecology.

*Tendipes decorus* (Johannsen); Jamnback, 1954: 1-36, ecology; control.

*Tendipes decorus* (Johannsen); Jamnback and Collins, 1955: 1 ecology; control.

*Tendipes (Tendipes) decorus* (Johannsen); Neff, 1955: 10, larva, pupa and adult; ecology.

*Tendipes (Tendipes) decorus* (Johannsen); Tebo, 1955: 96, ecology.

*Tendipes decorus* (Johannsen); Jamnback and Collins, 1956: 1-5, ecology; control.

*Chironomus decorus* Johannsen; Paine and Gaufin, 1956: 296, ecology.

*Tendipes decorus* (Johannsen); Judd, 1957: 401, phenology.

*Tendipes (Tendipes) decorus* (Johannsen) Roback,

1957b: 17, distribution of adult; 1957c: 113, description of larva and pupa.

*Tendipes (Tendipes) decorus* (Johannsen); Sublette, 1957: 390, ecology; phenology.

*Chironomus decorus* (Johannsen); Gaufin, 1958: 202, and following pages, ecology.

*Tendipes (Tendipes) decorus* (Johannsen); Dendy and Sublette, 1959: 514, adults.

*Chironomus (Chironomus) decorus* Johannsen; Beck and Beck, 1959: 94, distribution of adults; phenology.

*Tendipes decorus* [(Johannsen)]; Provost and Branch, 1959: 49-62, ecology.

*Tendipes (Tendipes) attenuatus* (Walker); Townes, 1959: 135, synonymy; notes on type.

*Tendipes (Tendipes) decorus* (Johannsen); Davis, 1960: 212, distribution of adults; phenology.

*Tendipes (Tendipes) attenuatus* (Walker); Darby, 1962: 161, ecology.

Males: Wing length 2.93-4.05, mean 3.41 mm (4); leg ratio 1.61-1.84, mean 1.70 (4); antennal ratio 3.75-4.10, mean 3.92 (3).

Material examined: One male, 27-X-55; 1 female, 8-II-56; 1 female, 9-II-56; 1 female, 3-III-57; 2 females, 5-II-57; 1 female, 17-IV-57, Ch.L. One male, 6-II-57; 1 male, 21-X-57; 1 male, 4-XI-57; 1 male, 19-21-III-58; 1 male, 12-V-58; C.R.L. One male, 18-V-54; 1 male, 11-X-56; 3 males, 14-I-57; 2 males, 14-II-57; 2 males, 15-II-57; 1 male, 28-II-57; 3 males, 3 females, 2-III-57; 2 males, 1 female, 3-III-57; 1 male, 10-III-57; 1 male, 11-III-57; 5 males, 2 females, 12-III-57; 3 males, 13-III-57; 2 males, 28-III-57; 4 males, 5-IV-57; 3 males, 8-IV-57; 1 male, 9-IV-57; 4 males, 12-IV-57; 2 males, 16-IV-57; 1 male, 29-IV-57; 1 male, 6-V-57; 3 males, 14-V-57; 2 males, 15-V-57; 1 male, 21-V-57; 2 males, 16-VI-57; 12 males, 28-VI-57; at light, Natchitoches, La.

#### CHIRONOMUS (CHIRONOMUS) FULVIPILUS Rempel

*Chironomus fulvipilus* Rempel, 1939: 210, description of adult.

*Tendipes (Tendipes) fulvipilus* (Rempel); Townes, 1945: 119, adults.

*Tendipes (Tendipes) fulvipilus* (Rempel); Dendy and Sublette, 1959: 514, adults.

*Chironomus (Chironomus) fulvipilus* Rempel; Beck and Beck, 1959: 94, adults; distribution; phenology.

*Tendipes (Tendipes) fulvipilus* (Rempel); Sublette, 1960: 211, adults.

Larva and pupa have been associated by rearing in other studies by the author and will be described elsewhere.

Material examined: One male, 7-IX-56; C.R.L.

CHIRONOMUS (CHIRONOMUS)  
NATCHITOCHEAE new species

(*Einfeldia* group)

Holotype male: U.S.N.M., No. 66457. Collected at the U. S. Fish Hatchery, Natchitoches, Louisiana, 20-VIII-58, R. F. Tyler.

Head brownish; antennal pedicel blackish-brown; antennal flagellum dark brown; antennal ratio 3.00; frontal tubercles large and conspicuous, 0.07 mm long; palpi dark; ratio, 5:12:20:27. Mesothorax yellowish-brown; vittae, postnotum and sternopleuron blackish-brown; mesonotum with a slight central hump; scutellum infusate; halteres dark; wing length 2.61 mm; dorsolateral bristles in a single row, sparse. Forelegs darkened on distal one-third of femur, and tarsal segments 2 to 5; middle and hind legs darkened on distal two-thirds of femur, basal one-third of tibia and tarsal segments 3 to 5; combs of middle and hind legs with two short spurs of about equal length. Foretarsus without a beard. Wings without macrotrichiae but with conspicuous microtrichiae. Abdomen entirely blackish-brown.

Leg proportions:

	F	Ti	Ta <sub>1</sub>	2	3	4	5	Leg ratio
Foreleg	57	40	88	44	34	28	11	2.20
Middle leg	58	50	30	15	10	5	4	0.60
Hind leg	60	65	48	23	17	10	6	0.74

Genitalia very similar to *chelonia* Townes but differs in having a more clavate dististyle. Figure 40 shows the normal view; Figure 41 shows anal point and superior appendage in lateral view.

Allotype: In the Collection of the U. S. National Museum. Collected at the U. S. Fish Hatchery, 4-X-58, R. F. Tyler.

Coloration and other features similar to male except for sexual differences. The mesonotal hump is more conspicuous than in the male. Wing length 3.15 mm.

Leg proportions:

	F	Ti	Ta <sub>1</sub>	2	3	4	5	Leg ratio
Foreleg	60	45	98	38	33	27	12	2.18
Middle leg	65	55	32	16	12	6	5	0.58
Hind leg	68	70	50	23	18	11	8	0.71

Lamellae of genitalia scarcely produced ventrally, almost quadrate in outline, (Fig. 42).

This species keys to *brunneipennis* (Johannsen) in the key given by Townes (1945, page 111). It may be distinguished from that species by having the anal point of the

genitalia broadened rather than narrow and by differences in the superior appendage.

Paratype males: Wing length 2.39-2.70, mean 2.54 mm (4); leg ratio 1.85, 2.00 (2); antennal ratio 2.82-3.10, mean 2.93 (4).

Paratypes: Two females, 3-V-57; C.R.L. One male, 12-VIII-58; 7 males, 20-VIII-58; 5 males, 6-IX-58; 9 males, 12-IX-58; 21 males, 20-IX-58; 1 male, 1 pupal exuvia, 27-IX-58; 3 males, 2 females, 2 pupal exuvia, 4-X-58; 2 males, 1 pupal exuvia, 15-X-58; U.S.F.H. In the collections of the U.S.N.M., C.N.C., A.N.S.P., I.N.H.S., Cornell University, and Florida State Board of Health.

Larva: Described from exuvia associated with reared adult. Head length 0.59 mm; capsule ventrally darkened; tips of mandibles, torma, labial plate, and narrow occipital border, black. Labial plate as in Figure 43; mandible, Figure 44; antenna, Figure 45. Epipharyngeal area similar to other Chironomini: Pe, somewhat pulvilliform, Figure 46; Chb, 7 in number, finely serrate; torma, black tipped, distally with the usual bifurcation; Ch, 6 in number; Sm, finely pectinate; teeth not clearly discernible but in excess of 25 on each side; seta I, palmate, with very fine teeth; seta II, long, curving and unbranched; seta III, minute, medial to II and almost contiguous with it; Sp, small and inconspicuous.

Preanal papillae very short, each with 5 to 6 rather short, terminal yellowish bristles. Anal prolegs with about 18 long, curved, yellow claws.

Pupa: Described from exuviae. Length 8.00 mm; almost entirely blackish. Cephalic tubercle long and pointed with a conspicuous preapical bristle. Respiratory organs white with numerous branches, apparently arising from 3 main branches. Tergites II-VI with an anterior and posterior transverse band of spinulae, each tergite with a central, laterally more restricted patch of spinulae (Fig. 47). Segment II with the usual posterior row of upturned hooks; about 81 hooks in the row. Intersegmentalia between III-IV, with a few spinulae; between IV-V and V-VI, heavily spinose. Posterolateral comb of segment VIII shown in Figure 48; caudal fin with about 116 fringe bristles in an irregular double row.

The larva cannot clearly be distinguished from the Palearctic species *Chironomus* (*Chironomus*) *insolita* Kieffer (*Einfeldia*



group) on the basis of the description available to me.

The pupa is distinguished from all other Nearctic *Chironomus* (*Chironomus*) on the

basis of having a posterolateral comb of only 3 teeth. It might be confused with certain species of *Chironomus* (*Cryptochironomus*) but these are usually smaller



Figures 40-48. *Chironomus* (*Chironomus*) *natchitochae* new species. 40. genitalia of male; 41. anal point and superior appendage in lateral view; 42. female genitalia; 43. labial plate of larva; 44. mandible; 45. antenna; 46. pecten epipharyngis; 47. tergite chaetotaxy of pupa; 48. posterolateral margin of Segment VIII.

in size and the spines of the posterolateral comb are finer and paler.

#### CHIRONOMUS (DICROTENDIPES) MODESTUS Say

- Chironomus modestus* Say, 1823: 13, description of adult.  
*Tendipes (Limnochironomus) modestus* (Say); Townes, 1945: 106, adults; generic position.  
*Tendipes (Limnochironomus) modestus* (Say); Hauber and Morrissey, 1945: 288, description of larva, pupa and adult; phenology.  
*Tendipes (Limnochironomus) modestus* (Say); Neff, 1955: 9, larva, pupa and adult; ecology.  
*Tendipes (Limnochironomus) modestus* (Say); Tebo, 1955: 96, ecology.  
*Tendipes (Limnochironomus) modestus* (Say); Roback, 1957c: 111, larva and pupa.  
*Chironomus (Limnochironomus) modestus* (Say); Beck and Beck; 1959: 94, distribution and phenology of adults.  
*Tendipes (Dicrotendipes) modestus* (Say); Dendy and Sublette, 1959: 514, description of adult; generic position.  
*Tendipes (Dicrotendipes) modestus* (Say); Sublette, 1960: 218, adult.  
*Tendipes (Dicrotendipes) modestus* (Say); Darby, 1962: 38, 51, 54, 101, 158, adult.

Males: Wing length 2.11-2.70, mean 2.40 mm (4); leg ratio 1.66-1.86, mean 1.78 (3); antennal ratio 2.60-2.87, mean 2.74 (4).

Material examined: Four males, 29-III-54; 1 male, 12-IV-57; 1 male, 16-IV-57; 1 male, 6-V-57; 1 male, 16-VII-57; Natchitoches, La. One male, 5-II-57; Ch.L.

#### CHIRONOMUS (DICROTENDIPES) NERVOSUS Staeger

- Chironomus nervosus* Staeger, 1839: 567, description of adult.  
*Tendipes (Limnochironomus) lucifer* (Johannsen); Hauber and Morrissey, 1945: 288, description of larva, pupa and adult; phenology.  
*Tendipes (Limnochironomus) nervosus* (Staeger); Townes, 1945: 102, 103, 108, taxonomy.  
*Limnochironomus nervosus* [(Staeger)], Wohlschlag, 1950: 343, ecology.  
*Limnochironomus nervosus* [(Staeger)], Mundie, 1955: 578, ecology.  
*Limnochironomus nervosus* [(Staeger)], Palmen, 1955: 20, ecology.  
*Tendipes (Limnochironomus) nervosus* (Staeger); Anderson and Hooper, 1956: 262, ecology.  
*Limnochironomus nervosus* (Staeger); Mundie, 1957: 165, ecology.  
*Tendipes (Limnochironomus) nervosus* (Staeger); Sublette, 1957: 390, ecology.  
*Tendipes (Limnochironomus) nervosus* (Staeger); Roback, 1957c: 110-111, larva, pupa, in key.  
*Chironomus (Limnochironomus) nervosus* Staeger; Beck and Beck; 1959: 94, distribution and phenology of adults.

*Tendipes (Dicrotendipes) nervosus* (Staeger); Dendy and Sublette, 1959: 514, generic position.

- Tendipes nervosus* (Staeger); Judd, 1960: 207, phenology.  
*Tendipes (Limnochironomus) nervosus* (Staeger); Davis, 1960: 71 and following pages, ecology.  
*Tendipes (Dicrotendipes) nervosus* (Staeger); Sublette, 1960: 220, adult.  
*Tendipes (Limnochironomus) nervosus* (Staeger); Buscemi, 1961: 294, ecology.  
*Tendipes nervosus* (Staeger); Judd, 1961: 96, phenology.  
*Tendipes (Limnochironomus) nervosus* (Staeger); Darby, 1962: 158, ecology.

Males: Wing length 1.70-1.79, mean 1.76 mm (3); leg ratio 1.87-2.17, mean 2.00 (3); antennal ratio 2.27-2.67, mean 2.46 (3).

Material examined: Seven males, 7-IX-56; 2 males, 11-IX-56; 2 males, 6-II-57; 2 males, 2-VII-57; 1 male, 2 females, 16-VII-57; 2 males, 18-VII-57; 2 males, 20-VIII-57; 2 males, 22-VII-57; 1 male, 23-VII-57; 1 female, 27-VII-57; 1 male, 1 female, 30-VII-57; 1 male, 1-VIII-57; 4 males, 6-VIII-57; 2 males, 13-VIII-57; 1 male, 20-VIII-57; 2 males, 27-VIII-57; 1 female, 29-VIII-57; 4 males, 30-IX-57; 1 male, 7-X-57; 4 males, 14-X-57; 7 males, 21-X-57; 2 males, 5-V-58; 1 male, 12-V-58; 1 male, 10-VI-58; C.R.L. Two males, 29-III-54; 1 male, 18-V-54; 1 male, 28-II-57; 1 male, 2-III-57; 1 male, 12-III-57; 2 males, 13-III-57; 1 male, 26-III-57; 2 males, 28-III-57; 2 males, 5-IV-57; 1 male, 8-IV-57; 1 male, 12-IV-57; 1 male, 14-V-57; 2 males, 21-V-57; 2 males, 16-VI-57; 2 males, 28-VI-57; 2 males, 16-VII-57; 2 males, 22-VII-57; at light, Natchitoches, La.

#### CHIRONOMUS (DICROTENDIPES) INCURVUS new species

Holotype male: U.S.N.M., No. 66458; U. S. Fish Hatchery, Natchitoches, Louisiana 27-IX-58, R. F. Tyler.

Head and thorax pale stramineous; abdomen pale; antennal flagellum and front tarsus beyond middle of basitarsus darkened. Pronotum scarcely narrowed medially, only slightly inferior to anterior edge of mesonotum; mesoscutum with a slight hump. Frontal tubercles exceedingly small, scarcely visible at 100 magnification. Palpal proportions 7:10:15:22. Antennal ratio 1.88.

Wing length 1.80 mm; no supra-alar bristles; prealar bristles 3; dorsomedial bristles decumbent, apparently in one row; dorsolateral bristles in one row, erect; scu-

tellar bristles 8, large, in a straight transverse row, anteriorly are 2 smaller bristles, one on either side of the midline.

Leg proportions:

	F	Ti	Ta <sub>1</sub>	2	3	4	5	Leg ratio
Foreleg	48	35	66	30	25	22	10	1.89
Middle leg	42	35	21	11	7	5	5	0.60
Hind leg	45	52	32	18	13	8	5	0.61

Fore tarsus without a beard.

Wing veins scarcely darkened, membrane clear; venarum ratio 1.12.

Genitalia very similar to *nervosus* Staeger but with an inturned superior appendage which is distinctive (Fig. 49).

Allotype female: In the U. S. National Museum Collection; collected at the U. S. Fish Hatchery, 6-XI-58, R. F. Tyler.

Head somewhat darkened, thoracic vittae, postnotum and mesosternum brown; fore-legs beyond middle of femora, middle and hind tarsi, antennal flagellum, palpi and genital lamellae infuscate. Thoracic chaetotaxy as holotype male. Palpal proportions, 5:14:15:25. Antennal segment proportions, 15:10:10:10:15.

Wing length 2.48 mm; venarum ratio 1.11.

Leg proportions:

	F	Ti	Ta <sub>1</sub>	2	3	4	5	Leg ratio
Foreleg	55	42	75	31	26	23	11	1.79
Middle leg	50	47	25	12	8	5	5	0.53
Hind leg	53	65	37	19	16	8	5	0.57

Abdomen pale. Genital lamellae quadrate (Fig. 50); spermatheca ovoid, 0.11 x 0.08 mm, seminal duct emerging eccentric; ducts and spermatheca colorless (Fig. 51).

Paratype males: Wing length 1.62-1.80, mean 1.73 mm (3); leg ratio 1.90-1.94, mean 1.92 (3); antennal ratio 2.00-2.21, mean 2.11 (3).

Paratypes: Three males, 20-VIII-58; 8 males, 12-IX-58; 6 males, 20-IX-58; 5 males, 27-IX-58; 9 males, 15-X-58; 9 males, 29-X-58; 14 males, 1 female, 6-XI-58; 1 male, 15-II-59; U.S.F.H. One male, 24-XI-59; Chivary Dam Spillway, Natchitoches Parish, La. In the collection of A.N.S.P., Florida State Board of Health, C.N.C., I.N.H.S., and Cornell University.

This species may be distinguished from all other Nearctic species by the male genitalia, which are similar to *nervosus* but dif-

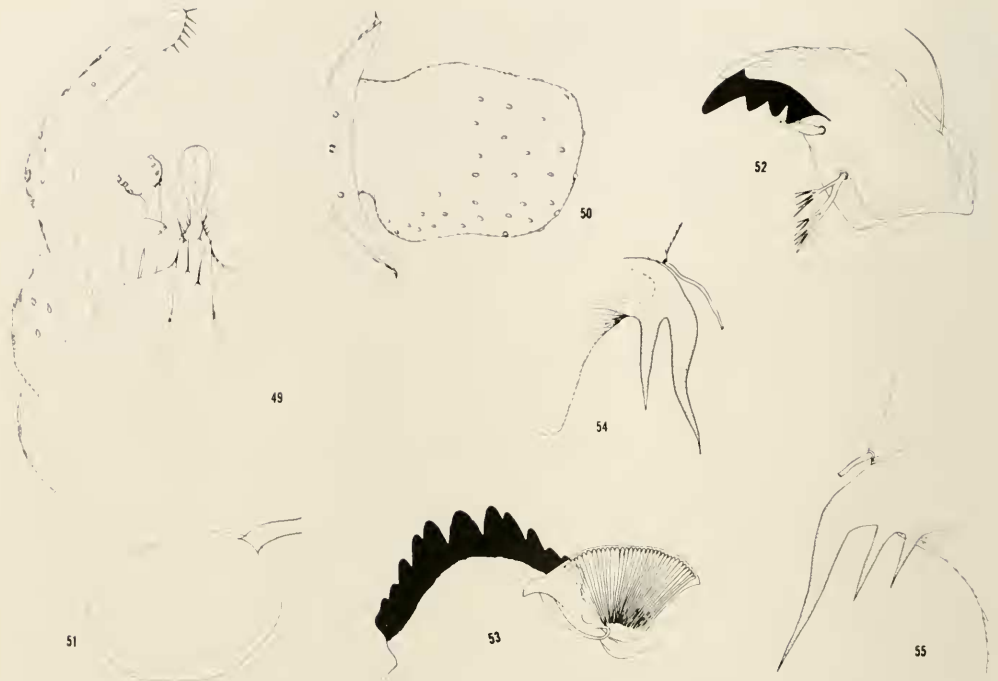
fer in having an inturned superior appendage.

Larva: Described from exuvia of reared male. Head length 0.50 mm. Head capsule yellowish except for tips of mandibles and labial plate. Mandible (Fig. 52) not at all like *nervosus* but rather more like *modestus* (cf. Hauber and Morrissey, 1945, figure 10). Mandible length 0.16 mm. Labial plate, (Fig. 53) also similar to *modestus*. In the single larva available, the details of the epipharyngeal area were obscured. The pre-mandible (torma) is yellowish and appears to be bifurcate. The antennae are also obscured in that they do not lie in a flat plane. Segment 3 appears shorter than 2 and 4 which are approximately subequal in length. The posterior part of the larval exuviae was lost.

Pupa: Described from exuvia of reared male and other exuviae compared with it. Exuvia dark yellowish-brown; length 4.5 mm. Respiratory organs a tuft of many white filaments. Cephalic tubercles short (0.04 mm) and conical, each with a fine preapical bristle. Abdominal tergites II to VI with fine shagreen, that of II occurring in a longitudinal band on either side of the midline, that of III to VI occupying most of the tergite. Segment II with the usual row of hooks along the posterior margin; the row consists of about 80 fine, yellowish hooks. Sternites I and II with a posterior band of colorless needle-like elongate spines; sternite III with a similar band of less elongate spines at about the anterior one-third; lateral margins of segments VI to VIII each with 4; flattened bristles, 2 in the anterior half and 2 in the posterior. Abdominal segment VIII with a conspicuous double spur (Figs. 54, 55 for variation). Swim fin with about 65 flattened filaments.

The larva keys in Roback (1957c, pages 109, 110) to *fumidus* Johannsen. It differs from *fumidus* by having the most laterad tooth of the labial plate appearing as a lateral shelf on the fifth tooth, and by having all mandibular teeth darkened.

The pupa keys to couplet 16 (page 111, op. cit.). It may be distinguished from *modestus* Say and *neomodestus* Malloch by a higher number of filaments in the swim fin (about 65) and by the distinctively different caudolateral spur of segment 8.



Figures 49-55. *Chironomus (Dicrotendipes) incurvus* new species. 49. male genitalia; 50. female genitalia; 51. spermatheca and duct; 52. larval mandible; 53. labial plate; 54. posterolateral spur of Segment VIII of pupa; 55. variation of posterolateral spur.

#### CHIRONOMUS (XENOCHIRONOMUS) XENOLABIS Kieffer

*Chironomus xenolabis* Kieffer (in Thienemann and Kieffer, 1916): 526, description of adult.

*Xenochironomus xenolabis* (Kieffer); Townes, 1945: 92, description of adult.

*Xenochironomus xenolabis* (Kieffer); Beck and Beck, 1959: 93, distribution and phenology of adult.

Males: Wing length 2.25-2.47, mean 2.38 mm (3); leg ratio 1.70 (1); antennal ratio 2.40-2.70, mean 2.46 (3).

Material examined: Three males, 2 females, 17-IX-57; 1 male, 24-IX-57; C.R.L. One male, 16-VII-57; at light, Natchitoches, La.

#### CHIRONOMUS (ENDOCHIRONOMUS) NIGRICANS Johannsen

*Chironomus nigricans* Johannsen, 1905: 219, description of larva, pupa and adult.

*Tanytarsus (Endochironomus) nigricans* (Johannsen); Townes, 1945: 64, description of adult.

*Tanytarsus nigricans* (Johannsen); Judd, 1949: 9, phenology.

*Tanytarsus (Endochironomus) nigricans* (Johannsen); Berg, 1950: 97-98, ecology.

*Tanytarsus nigricans* (Johannsen); Judd, 1953: 813, phenology.

*Tanytarsus (Endochironomus) nigricans* (Johannsen); Roback, 1953: 129, ecology.

*Tanytarsus (Endochironomus) nigricans* (Johannsen); Anderson and Hooper, 1956: 282, ecology.

*Endochironomus nigricans* (Johannsen); Paine and Gaufin, 1956: 296, ecology.

*Tanytarsus (Endochironomus) nigricans* (Johannsen); Roback, 1957c: 120, larva and pupa.

*Tanytarsus nigricans* (Johannsen); Judd, 1957: 401, phenology.

*Endochironomus (Endochironomus) nigricans* (Johannsen); Beck and Beck, 1959: 93, distribution and phenology of adult; generic position.

*Tendipes (Endochironomus) nigricans* (Johannsen); Dendy and Sublette, 1959: 514, adult; generic position.

*Tanytarsus nigricans* (Johannsen); Judd, 1960: 207, phenology.

*Tanytarsus (Endochironomus) nigricans* (Johannsen); Davis, 1960: 71 and following pages, ecology.

*Tendipes (Endochironomus) nigricans* (Johannsen); Sublette, 1960: 216, adult.

*Tanytarsus nigricans* (Johannsen); Judd, 1961: 96, phenology.

*Tendipes (Endochironomus) nigricans* (Johannsen); Darby, 1962: 157, ecology.

Males: Wing length 2.70-3.15, mean 2.93 mm (3); leg ratio 1.30, 1.32 (2); antennal ratio 2.67-3.05, mean 2.88 (3).

Material examined: Three males, 1 female, 17-IV-57; 4 males, 13-VIII-57; 1

male, 27-VIII-57; 1 male, 4-XI-57; 1 male, 10-IX-57; 1 male, 7-X-57; 5 males, 21-IV-58; 3 males, 4-VI-58; 1 male, 6-VI-58; 1 male, 10-VI-58; C.R.L. Two males, 20-IX-58; 2 males, 27-IX-58; U.S.F.H. Two males, 28 II-57; 1 male, 9-IV-57; 5 males, 29-IV-57; 2 males, 6-V-57; 5 males, 15-V-57; 2 males, 21-V-57; 1 male, 28-VI-57; at light, Natchitoches, La.

**CHIRONOMUS (CRYPTOCHIRONOMUS) PONDEROSUS** new species

Holotype male: U.S.N.M. No. 66459. Collected in a funnel trap, Cane River Lake, Natchitoches Parish, Louisiana, 19-V-58, B. R. Buckley.

Antennal pedicel yellowish-brown; antennal flagellum dark; antennal ratio 3.25; frontal tubercles absent; palpi slightly darkened, proportions, 7:25:20:32.

Thorax yellowish with vittae, postnotum, and sternopleuron golden brown; wing length 2.70 mm; prealar bristles 7; dorso-medial bristles in one row, erect; scutellar bristles about 14 in straight transverse row.

Legs yellowish with fore tibia, entire fore tarsus, and last 4 segments of middle tarsus darkened; hind tarsi missing. Fore tarsal beard absent.

Leg proportions:

	F	Ti	Ta <sub>1</sub>	2	3	4	5	Leg ratio
Fore leg	65	53	95	48	38	21	12	1.79
Middle leg	65	57	35	16	11	6	5	0.61
Hind leg	75	75	-	-	-	-	-	-

Abdomen yellowish-green. Genitalia very similar to *fulvus* (Johannsen) Townes, but differs in having a spatulate anal point and by having the basistyle and dististyle less massive, with the latter slightly curved (Figs. 56, 57).

Allotype female: In U.S.N.M. Lake Oberlin, Bryan Co., Oklahoma, 21-VII-62, reared from larva collected in silty-mud at 0.80 meters.

Antennal pedicel and antennal flagellum pale except terminal segment which is dark; palpi infuscate; proportions 6:20:16:30.

Thorax ground color stramineous; vittae, sternopleuron, and postnotum ocherous. Mesothorax with a conspicuous hump. Wing length 2.25 mm; 1 supra-alar bristle; dorso-medial bristles long, erect, in one row; dorso-lateral bristles long, erect, in one staggered row; scutellar bristles 15, in a long, posterior, straight, transverse row; 8 slightly

shorter in anterior straight row, antero-lateral bristles 4. Halteres pale.

Fore femora and tibiae dark; remainder of forelegs missing; middle and hind legs pale except for terminal 2 tarsal segments which are dark.

Leg proportions:

	F	Ti	Ta <sub>1</sub>	2	3	4	5	Leg ratio
Fore leg	55	42	-	-	-	-	-	-
Middle leg	52	46	29	13	9	5	5	0.63
Hind leg	55	55	40	18	15	8	6	0.73

Abdomen pale greenish. Genitalia, Figure 58.

Paratype males: Wing length 2.22-2.48, mean 2.36 mm (3); leg ratio 1.76-1.80, mean 1.78 (3); antennal ratio 3.22-3.50, mean 3.24 (3).

Paratypes: One male, 1 pupal exuvia, 13-VIII-57; 1 male, 2 pupal exuviae; 28-VIII-57; 1 pupal exuvia, 7-X-57; C.R.L. One male, 14-VI-62; 1 male, 18-VI-62; 4 males, 29-VI-62; 1 male, 20-VII-62; 3 pupal exuviae, 25-VII-62; at light, University of Oklahoma Biological Station, Willis, Okla. In the collections of C.N.C., A.N.S.P. and I.N.H.S.

This species is one of the *fulvus* group; the adult male is distinguishable by the genitalia with their long anal point, which is slightly spatulate apically.

Larva: Described from exuvia of reared allotype; associated by distinctive pupal armature.

Head dark yellow; tips of labium and mandible strongly contrasting black; head capsule 5.95 mm long. Labium (Fig. 59) very similar to *digitatus* (cf. Curry, 1958). Paralabial plates as other members of this group. Mandible (Fig. 60) also very similar to that of *digitatus* but with the accessory tooth longer and more attenuate. Antenna (Fig. 61) almost identical with that of *digitatus* but with a basal segment shorter relative to that of *digitatus*; ratio, 50:30:23:2:1. Premandible (torma) obscured on the single specimen available. The epipharyngeal area does not differ significantly from that illustrated by Curry (1958, figure 1) for *digitatus*. The jointed labral bristles are apparently only two segmented. Maxilla, Figure 62.

Anal prolegs each with about 15 curved yellowish spines; preanal papillae each with 8 bristles.

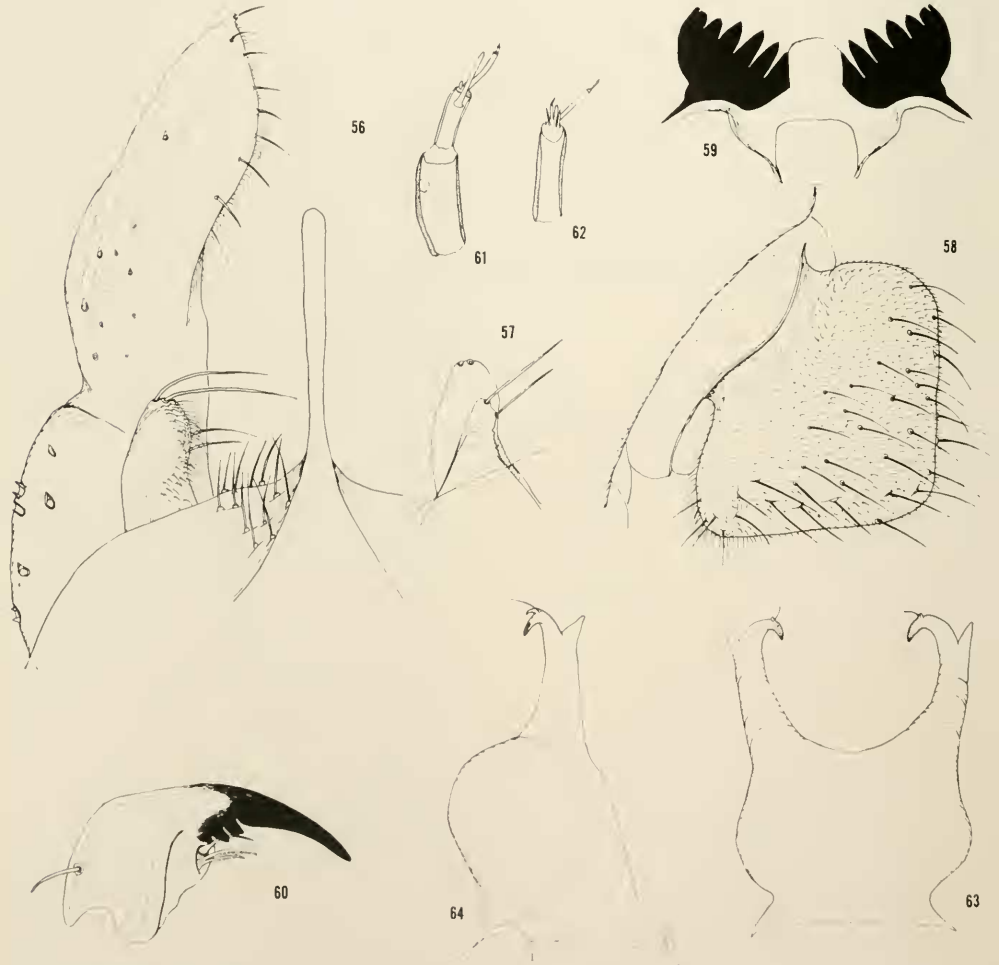
Pupa: Exuviae pale yellowish; the ce-

phalic tubercles (Figs. 63, 64) darker yellow. Exuviae length 6.5 mm. Respiratory organs consist of numerous white filaments. Abdominal tergite I with a conspicuous anterior lateral spinose tubercle on each side; tergite devoid of shagreen; tergite II with fine shagreen which is coarser near the lateral and ventral margins; posterior margin of II with the usual row of hooks numbering about 80, the row interrupted near the midline; tergites III to VIII with a partially doubled row of tubercle spines, the row being slightly interrupted near the midline; posteriorly the spines on each segment decrease in number and progressively become more acutely tipped; segments VI to

VII with 4 lateral flattened filaments which are about evenly spaced; segment VIII with 5 lateral filaments, 2 in the anterior half and 3 in the posterior half. Swim fin with a fringe of 72 filaments. Genital sacs with an acutely tipped terminal constriction; tergite IX with the usual bifurcate process.

The larva keys in Curry (1958: 431-433) to couplet 4. It may be distinguished from *sorex* (Townes) and *digitatus* Malloch by different features of the mandible and labial plate (cf. Figures 59, 60).

The pupa can be distinguished from all other species of this group by the distinctively different cephalic tubercles (cf. Figures 63, 64).



Figures 56-64. *Chironomus (Cryptochironomus) ponderosus* new species. 56. male genitalia; 57. details of inferior and superior appendage; 58. female genitalia; 59. larval labium; 60. mandible; 61. antenna; 62. maxilla; 63. cephalic tubercles of pupa, dorsal view; 64. cephalic tubercles of pupa, lateral view.

CHIRONOMUS (CRYPTOCHIRONOMUS) FULVUS Johannsen (Townes)

*Chironomus fulvus* Johannsen, 1905: 224, description of pupa and adult female. Townes (1945) reports the pupa to have probably been misidentified.

*Chironomus* sp. c Malloch, 1915a: 529, larva and pupa (fide, Townes, 1945).

*Cryptochironomus fulvus* (Johannsen); Townes, 1945: 98, adult male and female; synonymy.

*Cryptochironomus fulvus* (Johannsen); in part; Sublette, 1957: 389, ecology.

*Tendipes* (*Cryptochironomus*) *fulvus* (Johannsen); Dendy and Sublette, 1959: 516, generic position; adult male.

♂*Cryptochironomus fulvus* (Johannsen); Beck and Beck, 1959: 93, adult distribution; phenology.

*Tendipes* (*Cryptochironomus*) *fulvus* (Johannsen); Sublette, 1960: 223, adult male and female (part).

Nec!*Chironomus* (*Cryptochironomus*) *fulvus* Johannsen, 1937b: 39 larva and pupa.

Nec!*Cryptochironomus fulvus* (Johannsen); Curry, 1958: 435, larva and pupa; ecology.

Nec!*Tendipes* (*Cryptochironomus*) *fulvus* (Johannsen); Darby, 1962: 162, description of larva and pupa; ecology.

Larva: This species was briefly described by Malloch (1915a: 529) as *Chironomus* species c. During the present study several larvae were reared, the adults of which agreed with the description given by Townes, 1945, and the specimens from the Hauber collection identified by Townes.

Head 0.38-0.40, mean 0.39 mm long (5) by 0.26-0.29, mean 0.27 mm. wide (2). Head capsule yellow except for tips of mandibles and labial plate. Labial plate (Fig. 65) very similar to that of other species of the *fulvus* group, most closely resembling that of *C. digitatus* (Malloch) (cf. Curry, 1958, figure 19). The antenna (Fig. 66) is similar to that figured by Malloch (1915, Pl. XXX, figure 2) but differs in the details of the last two segments. The mandibles (Fig. 67) are also similar to that shown by Curry (op. cit.) for *digitatus*. The pre-mandibles (torma) are shown in Figure 68. The epipharyngeal area is indistinguishable from that of *digitatus* (cf. Curry, 1958, figure 1). Preanal papillae short, each with 6 to 7 pale terminal bristles. Anal prolegs with about 20 yellowish claws.

Pupa: Briefly described by Malloch (1915a) as *Chironomus* sp. c and keyed by Roback (1957c) as *Cryptochironomus* sp. 3.

The cephalic tubercles (dorsal view, Figs. 69 and 70; lateral view, Fig. 71) are distinctively different. There is some variation in this structure among different populations: it is construed as varietal. Exuviae

dark yellowish-brown; length 5.18-8.18, mean 6.23 mm (5). Tergite I devoid of spines or shagreen, but with two large ventral tubercles beset with denticles, a feature apparently characteristic of the *fulvus* group. Tergite II with the usual row of posterior marginal spines interrupted for about the middle one-fourth of the row length; the row composed of about 48 yellowish curved spines. Tergites III to VII each with a posterior row of denticles, the rows progressively decreasing in size posteriorly. Immediately in front of the posterior rows of segments III to V is a row of 4 fine bristles on each side of the midline; on segments VI and VII there are only 2 bristles instead of 4. Tergite VIII has only a single bristle on each side of the midline at the posterior margin. Between the genital sacs is the usual bifurcate process typical of this group. Swim fin with the bristle fringe in a single layer anteriorly, the posterior part doubled dorso-ventrally. Number of fringe bristles 50-67, mean 60 (3).

Adult: *Chironomus fulvus* Johannsen was described from a female, the characteristics of which are insufficient for specific recognition, as they are for most members of this family. The male was first described by Malloch (1915a) but Townes (1945) reported Malloch's series to have been mixed. The description of the male by Townes (op. cit.) is then the first authoritative one. Townes synonymizes with *fulvus* Johannsen the following: *fulvus* Johannsen, Malloch (in part); *parvilamellatus* Malloch; and *mallochii* Kieffer (= *abbreviatus* Malloch, nec Kieffer). As it now stands Townes' interpretation of *fulvus* must be accepted as definitive with his illustration of the male genitalia serving in lieu of type specimen. I have examined adult males in the Hauber Collection determined by Townes and believe the material at hand is conspecific with it. However, the adults which I listed for California (1960) also agree with the Hauber specimens in every feature examined. Darby (1962), on the basis of adults determined by me, described a larva and pupa which is identical with that illustrated by Curry (1958) for *fulvus*. Thus at least two distinct larval and pupal types appear to exist under the name of *fulvus*. Further, I have reared specimens of three additional pupal types (to be described elsewhere), the adults of which are indistinguishable

from *fulvus* in Townes' key. Thus *fulvus* probably is a complex of closely related species which are best defined by pupal characteristics. Distinctive adult characteristics remain to be demonstrated.

The pupa questionably associated with the holotype female is undoubtedly a member of the *Harnischia* group of *Cryptochironomus* as was pointed out by Townes (op. cit.) and Darby (op. cit.).

On the basis of Townes' synonymy of Malloch's *Chironomus* species c with *fulvus* I am taking it to represent the pupa of *fulvus*. With this reasoning Curry's and Darby's *fulvus* will need to be described as a new species.

The adult males before me agree well with the color description given by Townes (1945). The frontal tubercles are small and inconspicuous but clearly visible on a well mounted specimen. Postocular bristles in two rows; immediately behind the eyes is a straight row of large bristles; posterior to that is a smaller second row much more closely spaced. The hump at the end of the mesonotal median vitta is distinct. Dorsomedial and dorsolateral bristles long and

erect, the latter in a partial double row. Prealar bristles 5; supra-alar bristles absent; posterior scutellar bristles large and erect, about 10, in a straight transverse row; anterior scutellar bristles about 6, smaller, in a strewn pattern.

Antennal and leg ratios, as well as size (wing length) are highly variable among different populations. In all instances, however, values overlap. Wing length 1.94-3.15, mean 2.39 mm (29); leg ratio 1.60-2.02, mean 1.78 (27); antennal ratio 2.75-3.35, mean 3.04 (20).

The genitalia are quite variable as to ratio of width to length of dististyle: ratio 2.00-3.30, mean 2.60 (34). Two principal types are apparent, a light bodied one as shown in Figure 72 and a heavier one shown in Figure 73. Intermediates are shown in Figures 74 and 75.

Material examined: One male, 8-VI-57; 1 male, 2-VII-57; 1 pupal exuvia, 23-VII-57; 1 male, 6-VIII-57; 2 males, 13-VIII-57; 1 male, 10-IX-57; 1 male, 25-II-58; 1 male, 7-IV-58; 1 male, 5-V-58; 1 pupal exuvia, 10-VI-58; C.R.L. One pupal exuvia, 9-VI-51; 1 male, 29-VI-62; Uni-



Figures 65-75. *Chironomus* (*Cryptochironomus*) *fulvus* (Johannsen) Townes. 65. labial plate of larva; 66. antenna; 67. mandible; 68. premandible (torma); 69-70. cephalic tubercles, dorsal views; 71. cephalic tubercles, lateral view; 72. male genitalia; 73-75. variations of male genitalia.



versity of Oklahoma Biological Station. Two males, 29-IV-57; 2 males, 21-V-57; 2 males, 14-V-57; 1 male, 15-V-57; at light, Natchitoches, La. One male, 5-X-59; 1 male, 10-X-59; Sabine River at La.-Tex. line, west of Many, La. One male, 16-III-60; Bayou Pierre, 5 miles north of Natchitoches, La. One male, 25-VI-62; Ferguson's Pond, west of Willis, Okla. One male, 16-VI-60; small stream 7 miles east of Liberty, Tex. One male, 20-VI-41; 2 males, 14-VII-41; 1 male, 23-VII-41; 1 male, 27-VII-41; 1 male, 2-V-42; 1 male, 22-V-42; Davenport, Iowa. One male, 18-VII-40, Lake Okobojii, Iowa, from Hauber Collection. Two males, 11-V-60; Sabine Bayou east of Clarence, La. One pupal exuvia, 24-IV-60; Trinity River, 13 miles west of Livingstone, Tex. One male, 21-VII-62; Lake Oberlin, Bryan Co., Okla. One male, 16-III-60; Old River, Natchitoches Parish, La.

#### CHIRONOMUS (CRYPTOCHIRONOMUS) NIGROVITTATUS Malloch

*Chironomus nigrovittatus* Malloch, 1915a: 456, adult.  
*Harnischia (Harnischia) nigrovittata* (Malloch); Townes, 1945: 163, adult; generic position.  
*Harnischia (Harnischia) nigrovittata* (Malloch); Sublette, 1957: 393, description of pupa; phenology.  
*Harnischia (Harnischia) nigrovittata* (Malloch); Beck and Beck, 1959: 95, phenology and distribution of adult.  
*Tendipes (Cryptochironomus) nigrovittatus* (Malloch); Sublette, 1960: 224, description of adults; generic position.

Males: Wing length 1.36-1.70, mean 1.59 mm (3); leg ratio 1.40-1.62, mean 1.53 (3); antennal ratio 2.03-2.22, mean 2.10 (4).

Material examined: Two males, 18-VI-57; 1 female, 27-VIII-57; 1 male, 30-IX-57; 6 males, 11-XI-57.

#### CHIRONOMUS (CRYPTOCHIRONOMUS) CARINATUS (Townes) new combination

*Harnischia (Harnischia) carinata* Townes, 1945: 158, adult.  
*Harnischia (Harnischia) carinata* Townes; Sublette, 1957: 393, adult.  
*Harnischia (Harnischia) carinata* Townes; Beck and Beck, 1959: 95, adult distribution; phenology.

Larva and pupa unknown.

Males: Wing length 1.36-1.80, mean 1.57 mm (4); leg ratio 2.00-2.07, mean 2.02 (3); antennal ratio 2.06-2.10, mean 2.05 (3).

Material examined: One male, 16-VII-57; 2 males, 27-VIII-57; 2 males, 10-IX-57; 2 males, 30-IX-57; 1 male, 7-X-57; 1 male, 14-X-57; C.R.L. One male, 3-VI-57; at light, Natchitoches, La. One male, 15-X-58; U.S.F.H.

#### CHIRONOMUS (CRYPTOCHIRONOMUS) CHAETOALA (Sublette) new combination

*Tendipes (Cryptochironomus) chaetoala* Sublette, 1960: 220, description of adult.  
*Tendipes (Cryptochironomus) chaetoala* Sublette; Darby 1962: 35, 38, 50, 51, 59, 66, 73, 82, 83, 101, 160, 161, description of immature stages; ecology.

Males: Wing length 1.79-1.87, mean 1.85 mm (4); leg ratio 1.79-1.96, mean 1.88 (4); antennal ratio 2.14-2.50, mean 2.24 (4).

Material examined: One male, 29-III-54; 1 male, 11-IX-56; at light, Natchitoches, La. One male, 20-VIII-58; 5 males, 28-VIII-58; 4 males, 6-IX-58; 5 males, 12-IX-58; 4 males, 20-IX-58; 9 males, 27-IX-58; 1 male, 29-IX-58; 6 males, 4-X-58; 5 males, 15-X-58; U.S.F.H.

#### CHIRONOMUS (CRYPTOCHIRONOMUS) DIRECTUS (Dendy and Sublette) new combination

*Tendipes (Cryptochironomus) directus* Dendy and Sublette, 1959: 514, description of adult.

Material examined: In addition to the original type series from this locality, I have examined the following: Three males, 11-IX-56; 1 male, 27-VIII-57; 1 male, 17-IX-57; 2 males, 24-IX-57; 1 male, 30-IX-57; 1 male, 7-X-57; 3 males, 14-X-57; C.R.L. Two males, 6-IX-58; 3 males, 12-IX-58; 2 males, 20-IX-58; 7 males, 27-IX-58; 1 male, 15-X-58; 1 male, 29-X-58; 1 male, 6-XI-58; U.S.F.H.

#### CHIRONOMUS (CRYPTOCHIRONOMUS) EMORSUS (Townes) new combination

*Harnischia (Harnischia) emorsa* Townes, 1945: 161, description of adults.  
*Chironomus fulvus* Johannsen, 1905: 224, description of pupa, misdetermined.  
*Chironomus (Limnochironomus) sp.* Johannsen, 1938: (1937b) 44, description of pupa.  
*Harnischia (Harnischia) emorsa* Townes; Beck and 1957c: 101, pupa, in key.  
*Harnischia (Harnischia) emorsa* Townes; Roback, Beck, 1959: 95, adult.

Males: Wing length 1.46, 1.61 mm (2); leg ratio 2.14, 2.25 (2); antennal ratio 1.89, 2.24 (2).

An adult with an adherent pupal exuvia and a pupa with visible male genitalia collected during the study agree with the descriptions listed in Townes' synonymy given in parenthesis above, thus confirming his association.

Material examined: One male, 1 pupa, 6-VIII-57; 1 male, 10-VIII-57; C.R.L. One pupal exuvia, 20-X-55; Ch.L.

#### CHIRONOMUS (CRYPTOCHIRONOMUS) GALEATOR (Townes) new combination

*Harnischia (Harnischia) galeator* Townes, 1945: 170, description of adult male.

*Harnischia (Harnischia) galeator* Townes; Beck and Beck, 1959: 95, adult distribution and phenology.

Male: Wing length 1.62-1.75, mean 1.69 mm (4); leg ratio 1.70-2.34, mean 1.95 (4); antennal ratio 2.11-2.33, mean 2.22 (4).

Material examined: One male, 17-XI-55; Ch.L. Seventeen males, 27-VIII-57; 2 males, 3-IX-57; 2 males, 10-IX-57; 1 male, 30-IX-57; 4 males, 7-X-57; 1 male, 29-X-57; C.R.L. Two males, 2-III-57; 1 male, 29-IV-57; 1 male, 14-V-57; 1 male, 10-VII-57; at light, Natchitoches, La.

#### CHIRONOMUS (CRYPTOCHIRONOMUS) MONOCHROMUS van der Wulp

*Chironomus unicolor* van der Wulp, 1858: 5, description of adult.

*Chironomus monochromus* van der Wulp, 1874: 129 (new name for *unicolor* van der Wulp nec Walker, 1848).

*Harnischia (Harnischia) monochromus* (van der Wulp); Townes, 1945: 160, adult; generic position.

*Harnischia (Harnischia) monochromus* (van der Wulp); Sublette, 1957: 391, description of immature stages; ecology.

*Harnischia (Harnischia) monochromus* (van der Wulp); Beck and Beck, 1959: 95, distribution and phenology of adult.

*Tendipes (Cryptochironomus) monochromus* (van der Wulp); Dendy and Sublette, 1959: 516, generic position.

*Tendipes (Cryptochironomus) monochromus* (van der Wulp); Sublette, 1960: 223, adults.

*Tendipes (Cryptochironomus) monochromus* (van der Wulp); Darby, 1962: 38: 50, 53, 164, ecology; adult, in key.

Males: Wing length 1.49-1.94, mean 1.74 mm (4); leg ratio 1.50-1.80, mean 1.66 (4); antennal ratio 1.80-2.10, mean 1.97 (3).

Material examined: One male, 19-21-III-

58; 1 male, 7-IV-58; 9 males, 21-IV-58; 2 males, 30-IV-58; 3 males, 5-V-58; 2 males, 12-V-58; 3 males, 6-VI-58; C.R.L. One male, 3-III-57; 1 male, 11-III-57; 1 male, 12-III-57; 1 male, 16-III-57; 1 male, 28-III-57; 4 males, 8-IV-57; 2 males, 9-IV-57; 3 males, 12-IV-57; 5 males, 16-IV-57; 3 males, 29-IV-57; 1 male, 6-V-57; 2 males, 14-V-57; at light, Natchitoches, La. One male, 20-IX-58; 1 male, 15-X-58; U.S.F.H.

#### CHIRONOMUS (CRYPTOCHIRONOMUS) EDWARDSI (Kruseman)

*Chironomus (Chironomus) virescens* Meigen; Edwards, 1929: 391, misidentification of *virescens* Meigen.

*Tendipes (Parachironomus) edwardsi* Kruseman, 1933: 194, new name for *virescens* Meigen of Edwards; adult male.

*Harnischia (Harnischia) edwardsi* (Kruseman); Townes, 1945: 167, adult.

*Harnischia (Harnischia) edwardsi* (Kruseman); Beck and Beck, 1959: 95, adult distribution and phenology.

*Tendipes (Cryptochironomus) edwardsi* Kruseman; Sublette, 1960: 224, adult.

Larva: Described from exuviae.

Head length 0.34 mm; mandible length, 0.10 mm; head darkened on posterior gular region, tips of labial plate and mandibles; the latter slender, acutely tipped with basal teeth rather conspicuous, Figure 76. Labial plate, Figure 77; antenna, Figure 78; pre-mandible (torma), Figure 79. The epipharyngeal area differs somewhat from that illustrated for *Pseudochironomus aix* (Figure 37). Setae I and II, which are in line with one another, are large, simple and attenuate; seta II is slightly the larger; seta III is very small and inconspicuous and is located anterior and medial to II; the lateral spinulae are apparently absent, as are the pecten eppiharyngis, the chaetae, and the squama platia; there are about 5 chaetulae basales on each side. There is a single jointed dorsal labral bristle.

Pupa: Total length 2.92 mm; exuvia length 3.38 mm, exuviae pale yellowish-brown. Respiratory organ with about 20 fine branches. Cephalic tubercles prominent, acutely tipped (Figure 80). Tergite II with the usual posterior row of recurved hooks, the row interrupted along the midline and with about 12 hooks in each half. Tergites III to V with a partially doubled row of tubercle-like spines; tergite VI with a small mace-like tubercle (Figure 81) on midline, which is beset with the low tubercle-like

spines of the preceding segments. Tergites VII and VIII devoid of spines. Posterolateral margin of segment VIII with a short attenuate spine, Figure 82. Swim fin with a fringe of 48 bristles.

Males: Wing length 1.39-1.70, mean 1.50 mm (4); leg ratio 1.80-2.00, mean 1.91 (4); antennal ratio 1.88-2.02, mean 1.97 (5).

Material examined: One male, 21-IV-57; 3 males, 23-VIII-57; 1 male, 13-VIII-57; 6 males, 20-VIII-57; 3 males, 27-VIII-57; 1 male, 3-IX-57; 4 males, 10-IX-57; 2 males, 24-IX-57; 4 males, 30-IX-57; 10 males, 7-X-57; 21 males, 14-X-57; 4 males, 21-X-57; 1 male, 29-X-57; 7 males, 4-XI-57; 2 males, 11-XI-57; 1 male, 5-V-58; 1 male, 4-VI-58; C.R.L. Two males, 21-X-59; 1 male, 11-XI-59; Many, La. Two males, 20-X-55; Ch.L.

**GLYPTOTENDIPES (PHYTOTENDIPES) MERIDIONALIS** Dendy and Sublette

*Glyptotendipes (Phytotendipes) paripes* (Edwards); Sublette, 1957: 391, description of larva and pupa; ecology; misidentification of *paripes* (Edwards).

*Glyptotendipes (Phytotendipes) meridionalis* Dendy and Sublette, 1959: 517, description of adult.

*Glyptotendipes (Phytotendipes) meridionalis* Dendy and Sublette; Beck, 1961: 126, distribution; phenology.

The larva of *meridionalis* may be distinguished from that of *lobiferus*, the only other Nearctic species of this subgenus known in the larval stage, by the accessory tooth of the mandible which is simple in *meridionalis* and notched in *lobiferus*, and by the antenna the third segment of which is 0.60 as long as the second in *meridionalis* and 0.75 as long as *lobiferus*.

The pupa of *meridionalis* differs from that of *lobiferus* as follows (based on material before me):

exuviae length	
mean length times mean width of maces on abdominal 2nd segment	
3rd segment	
4th segment	
5th segment	
6th segment	
Color of spines of abdominal maces	
Mean number of spines on maces	
2nd segment	
3rd segment	
4th segment	
5th segment	
6th segment	
Number of caudo-lateral spines on segment 8	

Material examined: One male, 12-IX-58; U.S.F.H. One male, 9-XI-56; North Shore of Red River, Grande Ecore, Natchitoches, La. Five males, 28-II-57; 1 male, 3-III-57; 1 male, 12-III-57; 3 males, 13-III-57; 3 males, 29-IV-57; 1 male, 3-V-57; 2 males, 6-V-57; 2 males, 14-V-57; 1 male, 15-V-57; 3 males, 21-V-57; 1 male, 3-VI-57; 3 males, 25-VI-57; 1 male, 12-IV-58; at light, Natchitoches, La. One male, 7-IX-56; 4 males, 11-IX-56; 2 males, 22-X-56; 1 male, 6-II-57; 1 female, 8-VI-57; 1 male, 18-VI-57; 1 male, 19-VII-57; 1 male, 30-VII-57; 1 male, 7-IX-57; 1 female, 17-IX-57; 1 male, 1-X-57; 4 males, 7-X-57; 3 males, 1 female, 14-X-57; 1 male, 4-XI-57; 1 male, 11-XI-57; 1 male, 26-II-58; 1 female, 1-III-58; 1 male, 9-III-58; 2 males, 19-21-III-58; 2 females, 7-IV-58; 1 male, 12-V-58; 7 males, 2 females, 4-VI-58; 6 males, 6-VI-58; 1 male, 10-VI-58; 2 males, 10-VII-58; C.R.L.

**GLYPTOTENDIPES (PHYTOTENDIPES) LOBIFERUS** (Say)

*Chironomus lobiferus* Say, 1823: 12, description of adult.

*Glyptotendipes (Phytotendipes) lobiferus* (Say); Townes, 1945: 142, description of adult; generic position.

*Glyptotendipes lobiferus* (Say); Judd, 1949: 9, phenology.

*Glyptotendipes (Phytotendipes) lobiferus* (Say); Berg, 1950: 92-94, description of larva and pupa; ecology.

*Glyptotendipes lobiferus* [(Say)]; Gerry, 1951: 141-144, ecology.

*Glyptotendipes lobiferus* (Say); Judd, 1953: 813, phenology.

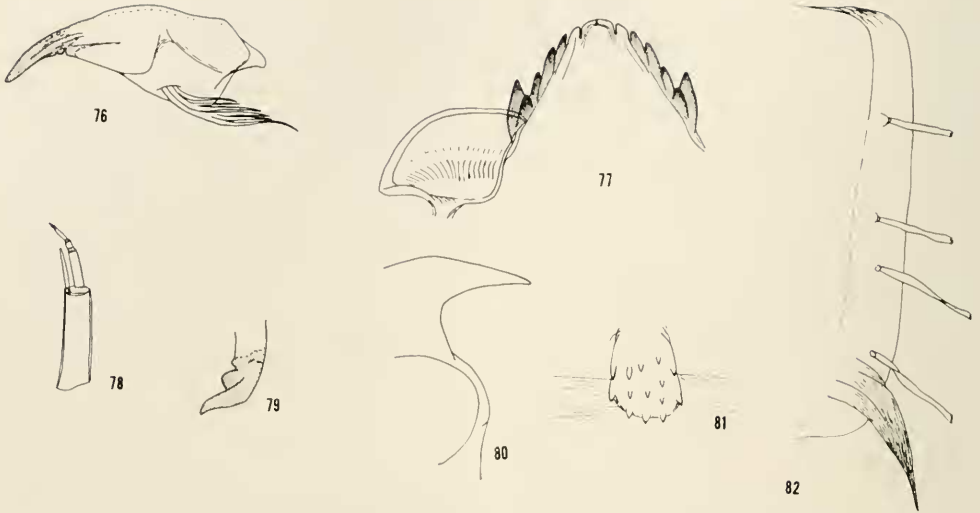
*Glyptotendipes lobiferus* [(Say)]; Gerry, 1954: 148, ecology; control.

*Glyptotendipes lobiferus* (Say); Paine and Gaufin, 1956: 296, ecology.

*Glyptotendipes (Phytotendipes) lobiferus* (Say); Ro-back, 1957c: 123, larva and pupa, in key.

*Glyptotendipes lobiferus* (Say); Judd, 1957: 401, phenology.

<i>meridionalis</i>	<i>lobiferus</i>
8.00 mm (7-8.5)	10.00 mm (9-11)
0.10 x 0.07 mm	0.16 x 0.10 mm
0.15 x 0.07 mm	0.22 x 0.12 mm
0.17 x 0.08 mm	0.24 x 0.12 mm
0.22 x 0.08 mm	0.31 x 0.14 mm
0.32 x 0.12 mm	0.53 x 0.22 mm
brown	yellowish
7	8
7	8
7	8
6	9
11	19
0-2	4-9



Figures 76-82. *Chironomus (Cryptochironomus) edwardsi* (Kruseman). 76. larval mandible; 77. labial plate; 78. antenna; 79. premandible (torma); 80. cephalic tubercles of pupa; 81. chaetotaxy of tergite VI; 82. spine of posterolateral margin of Segment VIII.

*Glyptotendipes (Phytotendipes) lobiferus* (Say); Beck and Beck, 1959: 95, distribution and phenology of adult.

*Glyptotendipes (Phytotendipes) lobiferus* (Say); Dendy and Sublette, 1959: 518, adult, in table.

*Glyptotendipes lobiferus* (Say); Judd, 1960: 207, phenology.

*Glyptotendipes (Phytotendipes) lobiferus* (Say); Sublette, 1960: 225, adult.

*Glyptotendipes lobiferus* (Say); Judd, 1961: 96, phenology.

*Glyptotendipes (Phytotendipes) lobiferus* (Say); Darby, 1962: 38, 39, 47, 59, 68, 74, 89, 101, 114, 170-172; description of larva, pupa and adult; ecology.

Males: Wing length 3.38-4.05, mean 3.78 mm (5); leg ratio 1.40-1.66, mean 1.47 (5); antennal ratio 4.12-5.10, mean 4.68 (5); body length 7.40-8.00, mean 7.51 mm (6);  $Ta_2:Ta_3$  1.21-1.31, mean 1.26 (5).

Material examined: One male, 23-VII-57; 1 female, 18-VII-57; 1 male, 6-VIII-57; 2 males, 17-IX-57; 1 female, 24-IX-57; 1 female, 3-X-57; 1 male, 14-X-57; 1 female, 1-III-58; 1 male, 1 female, 3-III-58; 1 male, 3-IV-58; 1 male, 7-IV-58; 1 male, 14-IV-58; 1 male, 21-IV-58; 2 males, 1 female, 12-V-58; 1 female, 19-V-58; 1 male, 19-VI-58; C.R.L. One male, 6-X-56, 1 male, 2-III-57; 1 male, 3-III-57; 1 male, 29-IV-57; 2 males, 14-V-57; 1 male, 15-V-57; 2 females, 28-VI-57; at light, Natchitoches, La. One male, 12-IX-58; 1 male, 27-IX-58; 1 male, 15-X-58; U.S.F.H.

PARALAUTERBORNIELLA ELACHISTA (Townes)

*Apedilum elachistus* Townes, 1945: 33, description of adult.

*Apedilum elachistus* Townes; Gerry, 1954: 146, ecology; control.

*Apedilum elachistus* Townes; Beck and Beck, 1959: 92, distribution and phenology of adults.

*Paralauterborniella elachistus* (Townes); Dendy and Sublette, 1959: 513, generic position.

nec! *Paralauterborniella elachistus* (Townes); Darby, 1962: 46, and following, description of larva, pupa and adult; ecology. I consider Darby's species to be a variety of *Paralauterborniella subcincta subcincta*.

Males: Wing length 1.22-1.56, mean 1.39 mm (4); leg ratio 1.29, 1.31 (2); antennal ratio 1.00-1.05, mean 1.03 (4).

Material examined: One male, 28-VII-57; 1 female, 13-VIII-57; C.R.L. One male, 20-VIII-58; 3 males, 28-VIII-58; 1 male, 12-IX-58; 1 male, 29-X-58; 1 male, 6-XI-58; 1 male, 27-XI-58; 1 male, 27-XI-59; U.S.F.H.

LAUTERBORNIELLA VARIPENNIS (Coquillett)

*Chironomus varipennis* Coquillett, 1902: 94, description of adult.

*Lauterborniella varipennis* (Coquillett); Townes, 1945: 21, description of adult.

*Lauterborniella varipennis* (Coquillett); Hauber, 1947: 459, description of larva and pupa; phenology; ecology.

*Lauterborniella varipennis* (Coquillett); Beck and Beck, 1959: 92, distribution and phenology of adult.

Males: Wing length 1.45-1.69, mean 1.59 mm (4); antennal ratio 1.35-1.66, mean 1.51 (4).

Material examined. Two females, 3-VII-57; 1 male, 30-VII-57; 2 males, 1 female, 6-VIII-57; 1 female, 20-VIII-57; C.R.L. One female, 28-VIII-58; 1 male, 6-IX-58; 3 males, 12-IX-58; 1 male, 20-IX-58; 1 male, 27-IX-58; U.S.F.H.

### STENOCHIRONOMUS MACATEEI (Malloch)

*Chironomus macateei* Malloch, 1915b: 45, description of adult.

*Stenochironomus macateei* (Malloch); Townes, 1945: 89, adults.

*Stenochironomus macateei* (Malloch); Paine and Gaufin, 1956: 296, ecology.

Males: Wing length 1.67-1.85, mean 1.77 mm (3); leg ratio 1.13, 1.21 (2); antennal ratio 1.70-2.00, mean 1.83 (3).

Material examined: Four males, 1 female, 30-VII-57; light trap, Natchitoches, La.

### PEDIONOMUS gen. nov.

Type species: *Pedionomus beckae* new species.

Male antenna composed of 13 segments; female with 5 (2 basal segments fused immovably together, thus considered as 1). Fork of the cubitus distinctly distal to r-m crossvein.  $R_1$  parallel with  $R_{2+3}$  for most of length then slightly divergent at tip; distinctly separated. Wing membrane devoid of macrotricha but with conspicuous microtricha at 100 magnification. Pronotum narrowed dorsally, inferior to anterior projection of mesonotum. Dorsocentral and dorsolateral bristles conspicuous, in partial biserial rows. The dorsocentral bristles begin at the anterior margin of the mesoscutum and extend posteriorly to the conspicuous hump of the mesonotum. Anterior tibia with a projecting scale which bears, in addition to a terminal small spine, 2 conspicuous setae (Fig. 83). Middle and hind tibiae with combs that are contiguous or overlapping, not fused (middle tibial combs, Figure 84). The middle tibia has one long spine on the inner comb and none on the outer, while the hind tibia has a still longer spine on the outer but none on the inner comb; spines on both combs with slightly recurved tips. Pulvilli present, deeply pectinate but not bilobed as in *Polypedilum*.

Eighth abdominal segment not basally constricted as is *Polypedilum*.

Male genitalia, Figure 85, similar to *Stictochironomus* and *Polypedilum* but lacking inner row of setae at apex of dististyle; basal part of superior appendage more elongate than in these genera.

Etymology. Dwelling on the plains.

### PEDIONOMUS BECKAE new species

Holotype male: U.S.N.M. No. 66460. Reared from a larva collected on floating wood, Cane River Lake, Natchitoches Parish, Louisiana, 1-X-57, J.E.S.

Head and antennal pedicel yellowish-brown, concolorous with ground color of thorax; antennal flagellum, narrow vittae and sternopleuron darker brown. Postocular bristles in a single row, reaching a point level with dorsal extension of eyes. Frontal tubercles absent; palpi normal, proportions 7:15:15:25, clypeus with 20 bristles. Antennal ratio 2.31.

Pedicel of haltere pale; knob black; wing length 2.04 mm; venarum ratio 1.12; supralar bristles absent; prealar bristles 6; dorso-median bristles partially in 2 rows, long and erect; dorsolateral bristles partially in 2 long, erect rows; scutellum with a posterior row of 18 heavy bristles in straight, transverse row; anteriorly with 8 fine bristles in a slightly staggered row.

Leg proportions:

	F	Ti	Ta <sub>1</sub>	2	3	4	5	Leg ratio
Foreleg	55	42	70	45	35	27	12	1.66
Middle leg	60	50	33	20	15	8	5	0.66
Hind leg	63	57	47	27	20	12	6	0.83

Wing hair fringe long and dark; squama with about 10 hairs. Wing membrane devoid of macrotricha but with conspicuous microtricha visible at 100 magnification.  $R_1$  parallel with  $R_{2+3}$  to near tip where the two diverge slightly; tips distinctly separated.  $R_{4+5}$  terminates over M; fork of Cu distal to r-m crossvein.

Abdominal incisures pale; each tergite occupied by a broad dark brown fascia; abdomen thus with conspicuous vittate pattern.

Genitalia (Fig. 85) superficially resemble that of several species of *Polypedilum*, *Stictochironomus*, and *Tribelos* but differs in lacking an inner apical row of bristles on dististyle, by having abbreviate dististyles, and by the distinctively shaped superior ap-

pendage. The almost parallel-sided eighth abdominal segment is in strong contrast with the triangular shaped one of *Poly-pedilum*.

Allotype female: U.S.N.M. Reared from larva collected from floating wood, Cane River Lake, Natchitoches Parish, Louisiana, 1-X-57.

Similar to the male except for sexual differences and a generally darker coloration. Head and thorax dark cinnamon brown, the thoracic vittae slightly darker; abdomen fasciate, the dark bands broader than in the male. Clypeus with 23 bristles; palpi proportions 5:13:13:24.

Wing length 2.18 mm; venarum ratio 1.19; prealar bristles 5 (paratype female); scutellar bristles 15 (paratype female).

Leg proportions:

	F	Ti	Ta <sub>1</sub>	2	3	4	5	Leg ratio
Foreleg	65	47	76	46	35	27	12	1.62
Middle leg	68	58	32	18	19	9	5	0.55
Hind leg	68	64	45	25	20	12	5	0.70

Genitalia, Figures 86 and 87. Spermathecae very pale but discernible; spherical, each 0.08 mm in diameter.

Larva: Described from exuviae. Head length 0.49 mm; mandible length 0.13 mm. Head yellowish except for tips of mandibles, labial plate and narrow occipital margin.

Labial plate, Figure 88; antenna 5 segmented, Figure 89; mandible, Figure 90.

Epipharyngeal apparatus similar to that illustrated for *Pseudochironomus aix* Townes (Figure 37). The pecten epipharyngis is composed of 3 palmate, contiguous plates; chaetulae basales about 7 in number, tips of at least 2 members finely pectinate; squama platia with about 21 fine teeth forming a comb on each side; seta I palmate, shorter than in *P. aix*, distally fringed; seta II long, curved and undivided; seta III as in *P. aix*; seta IV present as 2 small peg-like structures on each side; chaetae about 6 on each side, finely pectinate; spinulae low and inconspicuous, about 4 on each side. Torma (premandible) yellowish, not distally darkened; with 3 terminal teeth which are progressively reduced in size basally.

Preanal papillae each with 8 long, yellowish bristles; on the anterior face of each papilla is the usual small bristle; below each papilla is a long yellow bristle. Each anal proleg with about 15 yellow claws.

Pupal exuviae: Total length 4.97 mm. Thorax, 1st two abdominal segments, and caudal lobe infuscate, remainder of exuvia pale except for dark spines and spinulae and lateral margin markings.

Cephalic tubercles scarcely discernible on the frontal plate; each low, rounded tubercle with a fine bristle. Respiratory organs long and finely branched, each with apparently 3 main basal branches.

Abdominal tergites as follows: I, devoid of shagreen. II, along the lateral margins are 2 fine, pale bristles each side. In the anterior one-third of the segment is a broad band of black spines like those illustrated on segment IV (Figure 91); at the posterior margin is the usual row of recurved black hooks numbering 37. In the center of the tergite on either side of the midline is an oval patch of fine shagreen.

III to V, pattern of bristles, spines, spinulae and shagreen essentially identical (cf. Figure 91 for segment IV). Intersegmental membrane between segments IV and V with a band of black spines (Figure 91). Shagreen of segment III less contiguous along anterior margin.

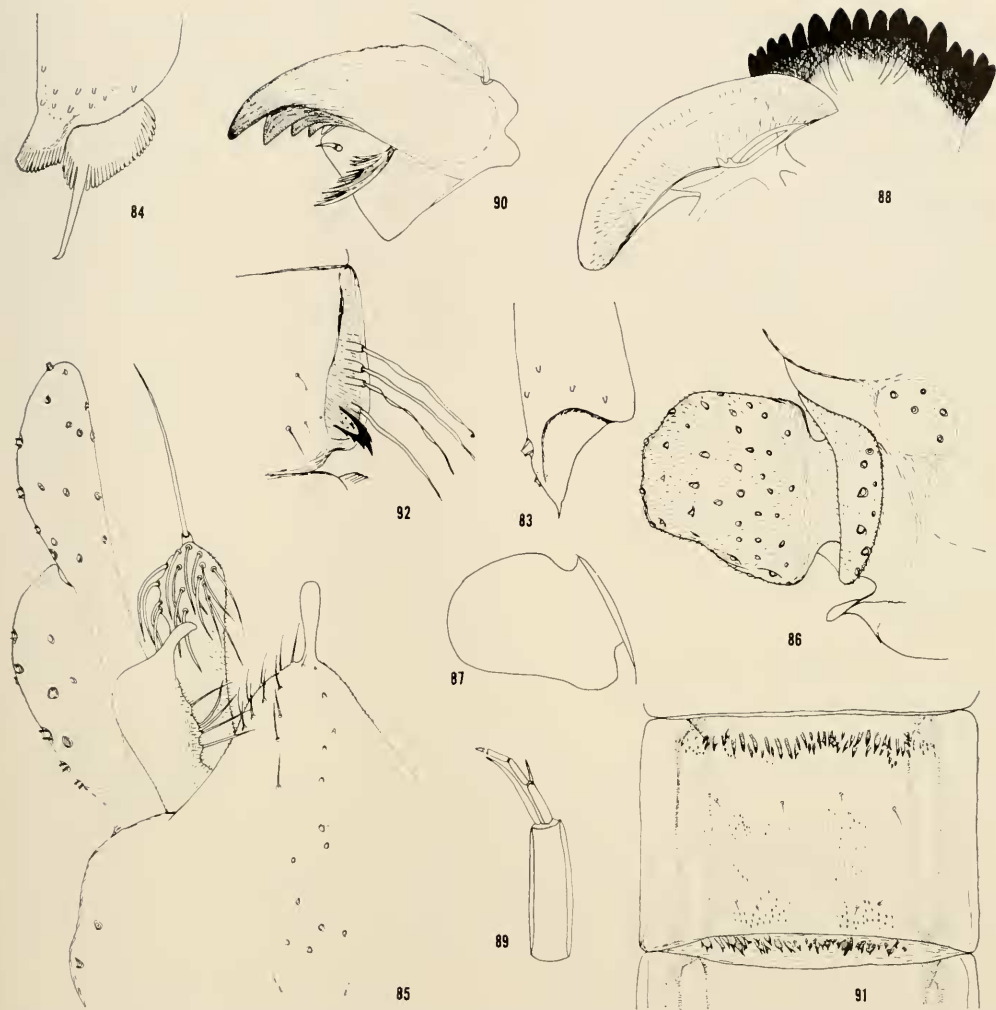
VI, anterior band of black spines absent. In the center of the tergite on either side of the midline is an ovoid patch of fine shagreen; near the posterior margin on either side of the midline is a patch of 10 to 12 fine spinulae.

VII, completely devoid of spines and shagreen.

VIII, posterolateral margin shown in Figure 92. Swim fin with about 82 uniformly arranged lateral filaments.

Paratype males: Wing length 1.78-2.22, mean 2.04 mm (9); leg ratio 1.51-1.87, mean 1.70 (5); antennal ratio 2.04-2.52, mean 2.34 (5).

Paratypes: One male, 1 female, 3-VII-57; 1 male, 13-VII-57; 2 males, 18-VII-57; 1 female, 22-VII-57; 1 male, 13-VIII-57; 1 female, 20-VIII-57; 1 female, 10-IX-57; 1 male, 17-IX-57; 3 males, 3 females, 24-IX-57; 1 male, 1-X-57; 2 males, 14-X-57; C.R.L. One male, 21-V-57; 1 male, 3-VI-57; 5 males, 30-VII-57; at light, Natchitoches, La. One male, 30-X-59; Old River, Cypress, La. One male, 1 female, 24-X-57; below Chivary Dam near Clarence, La. One male, 23-XI-59; Bayou Pierre, 5 miles north of



Figures 83-92. *Pedionomus beckae* new species. 83. foretibial apex; 84. middle tibial combs; 85. male genitalia; 86. female genitalia; 87. variation of female genitalia; 88. labial plate of larva; 89. antenna of larva; 90. mandible; 91 chaetotaxy of tergite IV of pupa; 92. posterolateral margin of Segment VIII.

Natchitoches, La. One male, 23-VI-57; 1 male, 30-VI-57; Polk Co., Lakeland, Fla. One male, 20-IX-60; 2 males, 16-VI-61; Jackson Co., Fla. One male, 13-VII-56; 1 male, 29-IX-60; Gadsden Co., Fla., Chattahoochee. One male, 16-X-57; Glades Co., Moore Haven, Fla. One male, 17-IX-60; 2 males, 28-IX-60; 1 male, 15-X-60; Wewahitchka, Fla., Gulf Co. One male, 6-IX-57; Seminole Co., Geneva, Fla. One male, 3-VIII-57; Miami, Dade Co. One male, 8-XI-60; Indian River, Vero Beach, Fla. One male, 23-IX-60; 1 male, 4-X-60; Broward Co., Andytown, Fla. One male, 6-IX-

57; Winter Park, Orange Co., Fla. One male, 16-IX-57; Nokomis, Sarasota, Fla. One male, 6-VII-57; Lake Worth, Palm Beach Co., Fla. One male, 9-VIII-57; Jacksonville Branch, Duval Co., Fla. Seven males, 8-V-62; Bayou George, Bay Co., Fla. Two males, 16-VI-60; Concho River Lake, San Angelo, Tex. One male, 14-VI-60; Lubbock, Tex. In the collections of U.S.N.M., C.N.C., A.N.S.P., I.N.H.S., Cornell University and Florida State Board of Health.

*Pedionomus beckae*, new genus and species, differs from *Polypedilum* by having the ninth tergite of the male subtruncate

rather than triangular in outline; the dististyle lacks long bristles; and the pulvilli are not bifid. It differs from *Stictochironomus* by having a conspicuous spine at the apex of the fore tibia and in details of the male genitalia.

The larva keys in Roback (1957c, pp. 96-98) to *Polypedilum*. It closely resembles the *fallax* group in having a labial plate with teeth of about equal length. It may be distinguished by the paralabial plates which are about 4 times as broad as long.

The pupa keys in Roback (loc. cit.) to *Tanytarsus* (part). This species does not fit well in his key to species of *Tanytarsus*. It can be distinguished from the species he described by the low rounded cephalic tubercle bearing a fine bristle.

I take pleasure in naming this species in honor of Mrs. Elisabeth Beck, Florida State Board of Health, who supplied the paratype material from Florida.

#### POLYPEDILUM (POLYPEDILUM)

##### TRIGONUS Townes

- Polypedilum (Polypedilum) trigonus* Townes, 1945: 49, description of adult.  
*Polypedilum (Polypedilum) trigonus* Townes; Hauber, 1947: 462, adult.  
*Polypedilum (Polypedilum) trigonus* Townes; Dendy and Sublette, 1959: 513, adult.  
*Polypedilum (Polypedilum) trigonus* Townes; Beck and Beck, 1959: 92, distribution; phenology of adult.

Males: Wing length 1.71-1.98, mean 1.83 mm (3); leg ratio 1.73 (1); antennal ratio 2.05-2.25, mean 2.13 (3).

Material examined: One male, 3-IX-57; 1 male, 17-IX-57; 1 male, 24-IX-57; 1 male, 30-IV-58; C.R.L.

#### POLYPEDILUM (POLYPEDILUM)

##### ILLINOENSE (Malloch)

- Chironomus illinoensis* Malloch, 1915a: 471, description of adult.  
*Polypedilum (Polypedilum) illinoense* (Malloch); Townes, 1945: 57, adult.  
*Polypedilum (Polypedilum) illinoense* (Malloch); Hauber, 1947: 462, description of larva and pupa; ecology.  
*Polypedilum (Polypedilum) illinoense* (Malloch); Berg, 1950: 91-92, description of larva and pupa; ecology.  
*Polypedilum (Polypedilum) illinoense* (Malloch); Roback, 1953: 124, ecology.  
*Polypedilum illinoense* (Malloch); Wurtz and Roback, 1955: 200, distribution; ecology.  
*Polypedilum (Polypedilum) illinoense* (Malloch); Tebo, 1955: 97, ecology.  
*Polypedilum (Polypedilum) illinoense* (Malloch); Paine and Gaufin, 1956: 296, ecology.

- Polypedilum (Polypedilum) illinoense* (Malloch); Sublette, 1957: 387, ecology; phenology.  
*Polypedilum (Polypedilum) illinoense* (Malloch); Roback, 1957: 117, description of larva and pupa.  
*Polypedilum (Polypedilum) illinoense* (Malloch); Dendy and Sublette, 1959: 513, adult.  
*Polypedilum (Polypedilum) illinoense* (Malloch); Beck and Beck, 1959: 93, distribution and phenology of adult.  
*Polypedilum (Polypedilum) illinoense* (Malloch); Sublette, 1960: 207, adult.

Males: Wing length 1.67-2.34, mean 1.98 mm (3); leg ratio 1.57-1.80, mean 1.68 (3); antennal ratio 1.73-2.00, mean 1.91 (3).

Material examined: One male, 5-II-57; 1 male, 28-III-57; 1 male, 9-IV-57; 2 males, 6-V-57; 1 male, 14-V-57; 1 male, 21-V-57; 2 males, 3-VI-57; 1 male, 11-VII-57; 1 male, 13-VIII-57; 1 male, 1-XI-57; 1 male, 5-V-58; C.R.L.

#### POLYPEDILUM (POLYPEDILUM)

##### DIGITIFER Townes

- Polypedilum (Tripodura) digitifer* Townes, 1945: 45, description of adult.  
*Polypedilum (Tripodura) digitifer* Townes; Sublette, 1957: 386, description of larva and pupa; ecology; phenology.  
*Polypedilum (Tripodura) digitifer* Townes; Beck and Beck, 1959: 92, distribution and phenology of adult.  
*Polypedilum (Polypedilum) digitifer* Townes; Dendy and Sublette, 1959: 513, adults.  
*Polypedilum (Polypedilum) digitifer* Townes; Sublette, 1960: 206, adults.  
*Polypedilum (Polypedilum) digitifer* Townes; Darby, 1962: 38, 48, 49, 146, 150, ecology.

Males: Wing length 1.56-1.80, mean 1.69 mm (4); leg ratio 1.83-2.08, mean 1.94 (4); antennal ratio 1.54-2.00, mean 1.81 (4).

Material examined: Four males, 20-X-55; 3 females, 21-X-55; 1 male, 27-X-55; Ch.L. One male, 7-IX-56; 1 male, 5 females, 22-X-56; 1 male, 2 females, 10-XII-56; 2 males, 26-II-57; 1 male, 3-III-57; 1 male, 28-III-57; 3 males, 5-IX-57; 2 males, 8-IV-57; 1 male, 12-IV-57; 1 male, 14-IV-57; 4 males, 16-IV-57; 1 male, 29-IV-57; 1 female, 30-IV-57; 1 male, 6-V-57; 1 male, 14-V-57; 1 male, 21-V-57; 1 intersex, 30-V-57; 1 male, 11 females, 3 intersexes, 18-VI-57; 6 males, 26 females, 5 intersexes, 25-VI-57; 1 male, 28-VI-57; 2 females, 2-VII-57; 1 male, 10-VII-57; 1 female, 1 intersex, 13-VII-57; 5 males, 7 females, 15-VII-57; 2 females, 16-VII-57; 3 females, 18-VII-57; 3 males, 23-VII-57; 1 male, 6-VIII-57; 2 males, 20-VIII-57; 2 males, 2 females, 27-VIII-57;



3 females, 28-VIII-57; 1 female, 10-IX-57; 1 male, 7-IX-57; 1 female, 30-IX-57; 1 intersex, 3-X-57; 1 male, 5-X-57; 4 males, 21-X-57; 3 males, 1 female, 30-XI-57; 1 male, 12-V-58; 1 male, 10-VI-58; C.R.L. Two males, 21-III-54; 1 male, 3-III-57; 1 male, 10-III-57; 4 males, 12-III-57; 2 males, 13-III-57; 3 males, 16-III-57; 2 males, 28-III-57; 3 males, 5-IV-57; 1 male, 21-V-57; 1 male, 1 intersex, 3-VI-57; 2 males, 16-VII-57; at light, Natchitoches, La.

### Tribe Tanytarsini

#### TANYTARSUS (CLADOTANYTARSUS) VIRDIVENTRIS Malloch

*Tanytarsus virdiventris* Malloch, 1915a: 491, description of adult. I have examined Malloch's type series.

*Tanytarsus mancus* Walker; Hauber, 1944: 456, description of pupa and adult, misidentification of *mancus* Walker. I have examined Hauber's material.

*Calopsectra virdiventris* (Malloch); Johannsen (in Johannsen and Townes), 1952: 26, adult, in key. *Tanytarsus* (*Cladotanytarsus*) *virdiventris* Malloch; Dendy and Sublette, 1959: 513, adult.

*Tanytarsus* (*Cladotanytarsus*) *virdiventris* Malloch; Darby, 1962, 38, 55, 56, 59, 70, 74, 92, 93, 101, 110, 111, 172-179, description of larva, pupa and adult; ecology.

Males: Wing length 1.40-1.80, mean 1.61 mm (3); leg ratio 1.73-2.00, mean 1.88 (3); antennal ratio 1.21-1.39, mean 1.30 (3).

Material examined: Five males, 25-VI-57; 1 male, 4-XI-57; 1 male, 19-VI-58; C.R.L. One male, 12-VIII-58; 1 male, 20-VIII-58; 1 male, 28-VIII-58; 1 male, 4-X-58; U.S.F.H.

#### TANYTARSUS (TANYTARSUS) CONFUSUS Malloch

*Tanytarsus confusus* Malloch, 1915a: 490, description of adult. I have examined Malloch's type series.

*Tanytarsus* (*Calopsectra*) sp. B Hauber, 1944: 454. I have examined Hauber's material and it appears to belong here.

*Calopsectra confusa* (Malloch); Johannsen (in Johannsen and Townes), 1952: 26, adult, in key. *Calopsectra confusa* (Malloch); Roback, 1956: 113-116, description of larva, pupa and adult; 1957c: 131-132, larva and pupa, in key.

*Calopsectra neoflavellus* (Malloch); Sublette, 1957: 385, description of larva and pupa; ecology; phenology: misidentification of *neoflavellus* Malloch. *Tanytarsus* (*Tanytarsus*) *confusus* Malloch; Dendy and Sublette, 1959: 513, adult.

Males: Wing length 1.80-2.12, mean 1.90 mm (4); leg ratio 2.67-2.73 (2); antennal ratio 1.33-1.61, mean 1.42 (5).

Material examined: One male, 20-VIII-

57; 1 male, 30-IX-57; 1 male, 7-X-57; C.R.L. Four males, 7-VIII-39; Lake Okoboji, Iowa, U. A. Hauber.

#### TANYTARSUS (TANYTARSUS) DENDYI new species

*Tanytarsus ejuncidus* Walker (?); Hauber, 1944: 455, description of pupa and adult, misidentification of *ejuncidus*.

Holotype male: U.S.N.M. No. 66461; collected in a tent trap, Cane River Lake, Natchitoches, La., 11-XI-57; B. R. Buckley.

Antennal pedicel, thoracic vittae, postnotum and sternopleuron blackish-brown; ground color of head, thorax and entire abdomen yellowish-green; antennal flagellum and legs infusate; halteres pale; postoculars in a single staggered row; frontal tubercles present, 0.03 mm long; palpal proportions: 10:15:15:25; antennal ratio 1.44.

Wing length 2.07 mm; venarum ratio 1.11. No supra-alar bristles; dorsomedial and dorsolateral bristles in a single row; scutellum with about 6 erect bristles in a straight transverse row.

Combs of middle and hind tibiae well separated, both inner and outer on each with a spur. Pulvilli not visible at 100 magnification.

#### Leg proportions:

	F	Ti	Ta <sub>1</sub>	2	3	4	5	Leg ratio
Foreleg	46	26	65	32	27	25	10	2.50
Middle leg	52	44	26	15	10	8	5	0.59
Hind leg	58	60	42	22	22	15	8	0.70

Wing membrane well haired on distal half; f-Cu distal to r-m.

Genitalia (Figure 93) very similar to *xanthus* new species, but differing in having appendage 1a less than half the length of the apex, and by having the group of bristles on the ninth tergite. Figure 94 shows a variant collected at the type locality.

Paratype males: Wing length 1.62-2.25; mean 1.87 mm (8); leg ratio 2.40-3.00, mean 2.60 (7); antennal ratio 1.21-1.76, mean 1.39 (7).

Paratypes: One male, 3-II-58; 1 male, 5-V-58; C.R.L. One male, 23-II-60; below Chivary Dam, Natchitoches Parish, La. One male, 16-III-57; at light, Natchitoches, La. Two males, 5-VI-56; 1 male, 6-VI-56; 4 males, 8-VI-56; 1 male, 15-XI-56; 1 male, 15-III-57; 1 male, 28-III-57; Auburn, Ala., J.S. Dendy. One male, 5-V-41; 1 male, 12-II-43; 2 males, 28-IV-43; 2 males, 25-V-43;

1 male, 5-VI-43; Davenport, Iowa. One male, 15-IV-42; 1 male, 12-II-43; Credit Island, Iowa. One male, 1-IV-42; 1 male, 10-IV-42; Duck Creek Park, Iowa. One male, 16-VI-60; Concho River Lake, San Angelo, Tex. In the collections of C.N.C., A.N.S.P., I.N.H.S., and Cornell University.

This species keys in Johannsen (in Johannsen and Townes, 1952, page 25) to *neoflavellus* Malloch; it may be distinguished by the distinctively different superior appendage of the male genitalia which in *neoflavellus* has a strong lateral tubercle. Also, the punctae of the anal point in *dendyi* n. sp. are in a single row; in *neoflavellus* they become multiple basally.

This species is named for Dr. J. S. Dendy, Auburn University, Auburn, Alabama, who contributed the paratype series from Alabama.

### TANYTARSUS (TANYTARSUS) XANTHUS new species

*Tanytarsus (Tanytarsus) neoflavellus* Malloch; Dendy and Sublette, 1959; 613, adult. Misidentification of *neoflavellus* Malloch. This identification had been based on an examination of a specimen in the INHS Collection, determined by Malloch. A recent examination of the lectotype by the author has revealed Malloch's type series to be of one species and the named specimen (slide no. 3075) to be another species, described here as new.

Holotype male: U.S.N.M. No. 66462. Collected from the hatchery ponds at the U. S. Fish Hatchery, Natchitoches, Louisiana, 12-VIII-58; funnel trap, R. F. Tyler.

Head, thorax and abdomen pale yellow, the thorax slightly darker because of the wing musculature.

Eyes somewhat reniform, the dorsal extension rather short and broad. Frontal tubercles present, length, 0.041 mm. Palpal proportions, 10:21:22:40. Antennal ratio, 1.53. Postocular bristles long and erect, in a single row of about 16 bristles.

Pronotum considerably below the rounded, projecting apex of the mesonotum; pronotum halves slightly notched. Dorsolateral and dorsomedial bristles long and erect, in a single row, the latter slightly staggered at mesonotal apex. A single heavy prealar bristle present. Scutellum with 6 bristles.

Wing membrane well haired almost to base.  $R_{1+5}$  ends proximal to M and distal to  $Cu_1$ . Wing length, 1.69 mm.

Fore tarsus not bearded. Pulvilli absent; epopodium finely dissected, almost as long

as claws which are almost straight being curved slightly only near tip.

Leg proportions:

	F	Ti	Ta <sub>1</sub>	2	3	4	5	Leg ratio
Foreleg	70	41	105	47	40	32	13	2.56
Middle leg	77	62	38	21	16	10	7	0.61
Hind leg	85	73	56	35	32	19	10	0.77

Both combs of middle and hind leg spurred; spurs of middle leg of unequal length; ratio, 15:10; longer spur curved near tip. Spurs of hind tibia almost equal in length; outer spur more strongly curved near tip than middle tibial spur.

Genitalia, Figures 98 and 99, with anal point sparsely and coarsely punctate; appendage Ia almost as long as apex of superior appendage; ninth tergite with bristles.

Female not associated.

Paratype males: Wing length 1.71-2.39, mean 2.07 mm (4); leg ratio 2.32-2.37, mean 2.35 (4); antennal ratio 1.32-1.46, mean 1.37 (5).

Paratypes: Louisiana: one male, 12-VIII-58; 1 male, 6-IX-58; 1 male, 12-IX-58; 2 males, 20-IX-58; 1 male, 27-IX-58; 2 males, 4-X-58; 2 males, 15-X-58; 1 male, 29-X-58; 5 males, 6-XI-58; 6 males, 4 pupal exuviae, 27-XI-58; 1 pupal exuvia, 12-XII-58; 1 pupal exuvia, 10-I-59; 1 male, 15-I-59; 2 males, 25-I-59; 8 males, 5-II-59; 2 males, 7-II-59; 1 male, 9-II-59; 10 males, 15-II-59; U.S.F.H. One male, 8-IV-57; 2 males, 9-IV-57; 1 male, 28-VI-57; at light, Natchitoches, La. Illinois: one male, Peoria, Ill., 22-X-14, slide 3075 (In I.N.H.S. sub *neoflavellus* Malloch; determined J. R. Malloch).

Larva: Described from exuvia of reared male.

Head capsule pale except for the yellowish mandibular tips, labial plate and narrow occipital margin. Head length 0.40 mm. Mandible (Fig. 95) 0.12 mm long. Antenna (Fig. 96) 0.20 mm long; basal tubercle without a spur. Epipharyngeal area similar to other Chironominae; labial plate, Figure 97; pecten epipharyngis composed of 3 digitate blades; chaetulae basales finely pectinate distally, apparently 5 on each side; torva (premandible) gently curved distally, yellowish at tip, somewhat obscured on the mount before me so that bifurcation not visible; 5 long curved filiform chaetae on each side; squama platia with about 24 exceedingly fine teeth; seta I rather closely spaced together, coarsely pectinate; seta II

anterior to I and directly in line with it, long curved filiform seta reaching posteriorly to the squama plate; seta III minute, anterior to II and in line with it; spinulae somewhat obscured; dorsal labral bristles not evident.

Prenal papillae short, each bearing 8 conspicuous long blackened bristles. Posterior prolegs with 14 hooked yellowish claws.

The larva may be distinguished from related Nearctic species by the paralabial plates lying close together at the midline; the antennal tubercle lacking a spine; and the petiole of the Lauterborn organs being about as long as the last 3 antennal segments.

Pupa: Described from exuviae of reared males and from exuviae found in funnel traps in which adult males were taken.

Exuviae length 5.18 mm; cephalic tubercles, respiratory organs and abdominal chaetotaxy as illustrated by Roback (1957c) for *neoflavellus*; comb of segment VIII similar to that figured by Roback (op. cit.) but more spinose (5-10 large marginal spines; about 20-25 smaller disc spines); swim fin with a fringe of 39-40 flattened bristles on either side; disc finely shagreened.

Paratypes in the collections of C.N.C., A.N.S.P., I.N.H.S. and Cornell University.

### TANYTARSUS (TANYTARSUS) NEOFLAVELLUS Malloch

*Tanytarsus neoflavellus* Malloch, 1915: 489, description of adult.

*Tanytarsus neoflavellus* Malloch; Boesel, 1940: 19, distribution and phenology.

*Calopsectra neoflavella* (Malloch); Johannsen (in Johannsen and Townes), 1952: 26, adult, in key.

*Tanytarsus neoflavellus* Malloch; Hauber, 1944: 455. Nec! *Tanytarsus* (*Tanytarsus*) *neoflavellus* Malloch; Dendy and Sublette, 1959: 513, adult, misidentification.

Nec! *Calopsectra neoflavellus* (Malloch) Sublette, 1957: 385, misidentification.

Males: Wing length 1.67-2.25, mean 1.94 mm (5); leg ratio 2.56-3.33, mean 2.93 (3); antennal ratio 1.20-1.44, mean 1.30 (5).

Material examined: One male, 11-VI-57; 4 males, 18-VI-57; 3 males, 25-VI-57; 1 male, 15-VII-57; 3 males, 23-VII-57; 1 male, 24-IX-57; 1 male, 7-X-57; 1 male, 11-XI-57; 1 male, 5-V-58; 1 male, 10-VI-58; C.R.L. Five males, 16-III-57; 1 male, 8-IV-57; 1 male, 29-IV-57; at light, Natchitoches, La. One male, 6-XI-58; U.S.F.H. One male,

6-VI-56; 2 males, 8-VI-56; 1 male, 28-III-57; 1 male, 8-IV-57; Auburn, Ala. One male, 8-VIII-39; 5 males, 7/8-VIII-39; 2 males, 6-VIII-49; Lake Okoboji, Iowa. One male, 2-IX-62; Stratford, Conn.

This species resembles *xanthus* new species as well as *dendyi* new species. It differs significantly in genitalia characteristics. The tubercle on the superior appendage and the details of the anal point are distinctive.

### TANYTARSUS (TANYTARSUS) RECELS new species

Holotype male: U.S.N.M. No. 66463. Collected from Cane River Lake, Natchitoches, Louisiana, 12-V-58, B. R. Buckley.

Head, thorax and abdomen pale stramineous; frontal tubercles small, conical, length 0.02 mm; antennal ratio 1.09. Palpal proportions 7:17:19:30.

Wing length 1.62 mm; one prealar bristle; halteres pale.

Combs of middle and hind legs separated; without spurs. Tip of legs obscured or missing so pulvilli not observed.

Leg proportions:

	F	Ti	Ta <sub>1</sub>	2	3	4	5	Leg ratio
Foreleg	75	48	108	-	-	-	-	2.25
Middle leg	80	-	-	-	-	-	-	-
Hind leg	95	85	-	-	-	-	-	-

Wing membrane well haired.

The genitalia, Figure 100, are very similar to *quadratus* new species but with the following differences: appendage 1a evenly attenuate, not swollen near center; anal point with the basal ornamentation closed below (basally); tip of anal point more rounded; appendage 2 (inferior appendage) strongly capitate with 4 to 5 posteriorly directed bristles; appendage 2a with long terminal lamellae; ninth tergite with only 2 rather inconspicuous bristles.

This species is very similar to *varela* (Roback) (cf. Roback, 1957c, page 128, fig. 455) but if his specimen is accurately figured this is a distinct new species.

### TANYTARSUS (TANYTARSUS) BUCKLEYI new species

Holotype male: U.S.N.M. No. 66464. Collected from Cane River Lake, Natchitoches Parish, Louisiana, 17-IX-57, B. R. Buckley. Frontal tubercles small, cylindrical; length

0.03 mm; palpal proportions 8:15:19:28. Antennal ratio 0.96.

Ground color of head and thorax yellowish; antennal pedicels, pronotum, mesonotal vittae, postnotum and sternopleuron cinnamon brown; halteres pale. Wing length 1.36 mm. Prealar bristles 1; dorsolateral and dorsomedial bristles in one row, large and erect; scutellar bristles 6, large and erect.

Except for the coxae the legs are pale; forelegs slightly darker; tarsal beard absent. Tibial combs of middle and hind legs well separated; those of the hind leg each with a spur; those of middle leg with a spur only on the inner comb. Pulvilli not visible at 100 magnification.

Leg proportions:

	F	Ti	Ta <sub>1</sub>	2	3	4	5	Leg ratio
Foreleg	60	34	67	38	30	20	10	1.97
Middle leg	60	48	26	15	10	6	5	0.54
Hind leg	68	63	40	25	22	14	10	0.63

Wing membrane sparsely haired only on distal one-sixth; R<sub>4+5</sub> terminates proximal to M and distal to Cu<sub>1</sub>.

Abdomen greenish-yellow. Genitalia, Figure 101.

Paratype males: Wing length 1.19-1.80, mean 1.47 mm (5); leg ratio 1.87-2.10, mean 1.96 (3); antennal ratio 0.90-1.21, mean 1.07 (4).

Paratypes: One male, 13-VII-57; 1 male, 20-VIII-57; 2 males, 3-IX-57; 2 males, 30-IX-57; 1 male, 14-X-57; 2 males, 11-XI-57; 1 male, 9-XII-57; 1 male, 16-XII-57; 4 males, 23-XII-57; C.R.L. In the collections of C.N.C., A.N.S.P.

This species keys to *pusio* (Meigen) in Johannsen's key (in Johannsen and Townes, 1952, page 26). I have examined Johannsen's material at Cornell University and the species which he identified as *pusio* Meigen is totally different from *buckleyi* new species. Further, his material does not agree with the scanty description of *pusio* in European literature. *Pusio* probably does not occur in the Nearctic region. *Tanytarsus* (*Tanytarsus*) *buckleyi* new species is very similar to *glabrescens* Edwards, a Palaearctic species, but appears to differ in details of genitalic structure (cf. Edwards, 1929, figure 15f; Brundin, 1947, figure 112).

This species is named in honor of Burton R. Buckley, Natchitoches, Louisiana, who

collected the specimen designated here as holotype.

### TANYTARSUS (TANYTARSUS) QUADRATUS new species

Holotype male: U.S.N.M. No. 66466. Collected from Cane River Lake, Natchitoches Parish, Louisiana, 2-III-58, funnel trap, B. R. Buckley.

Frontal tubercles small, cylindrical, length 0.25 mm; antennal ratio 1.16. Palpal proportions 5:13:15:23.

Ground color yellowish; antennal pedicels, pronotum, mesonotal vittae, sternopleuron and postnotum dark cinnamon brown. Scutellum infusate. Mesothorax with a distinct hump; halteres pale. Wing length 1.72 mm. Prealar bristles 2; dorsolateral and dorsomedial bristles in one row; scutellar bristles 8, large and erect; in a straight, transverse row.

Legs pale; posterior 4 tibial combs small, well separated, without spurs; forelegs not bearded. Pulvilli not visible at 100 magnification.

Leg proportions:

	F	Ti	Ta <sub>1</sub>	2	3	4	5	Leg ratio
Foreleg	85	63	86	50	40	27	13	1.36
Middle leg	90	72	45	25	20	7	7	0.63
Hind leg	95	95	62	40	25	15	15	0.65

Wing membrane well haired almost to wing base.

Abdomen with yellowish ground color, each tergite almost completely covered by a brown band, thus giving abdomen vitate appearance.

Genitalia, Figure 106, very similar to *dissimilis* Johannsen and *recens* new species.

Paratype males: Wing length 1.28-1.99, mean 1.59 mm (5); leg ratio 1.31, 1.34 (2); antennal ratio 1.05-1.26, mean 1.12 (3).

Paratypes: One male 27-VIII-57; 1 male, 3-II-58; 1 male, 22-II-58; 1 male, 2-III-58; 3 males, 12-V-58; C.R.L. In the collections of C.N.C., A.N.S.P.

This species runs in Johannsen's key (in Johannsen and Townes, 1952, pages 25, 26) to *dissimilis* Johannsen. It may be differentiated from that species by having a more setose ninth tergite, a shorter more quadrate anal point, and by differently shaped appendages 1a and 2a. It differs from *recens* new species in several features as noted under that species.



Figures 93-94. *Tanytarsus (Tanytarsus) dendyi* new species. 93. male genitalia; 94. variation of male genitalia. Figures 95-99. *Tanytarsus (Tanytarsus) xanthus* new species. 95. larval mandible; 96. antenna; 97. labial plate; 98. male genitalia; 99. details of appendage-2a. Figure 100. *Tanytarsus (Tanytarsus) recens* new species. 100. male genitalia. Figure 101. *Tanytarsus (Tanytarsus) buckleyi* new species. 101. male genitalia.

## TANYTARSUS (TANYTARSUS)

## ALLICIS new species

Holotype male: U.S.N.M. No. 66465; U. S. Fish Hatchery, Natchitoches, Louisiana, 29-X-58, R. F. Tyler.

Antennal pedicel, thoracic vittae, postnotum and mesosternum dark brown; ground color of head, thorax and abdomen stramineous; legs, antennal flagellum and halteres scarcely darkened. Antennal ratio 1.00. Frontal tubercles small, conical; length 0.02 mm. Palpal proportions 6:15:19:30.

Wing length 1.49 mm. Dorsomedial and dorsolateral bristles in one row, erect, scutellum with 5 long erect bristles.

Fore tarsus not bearded; middle tibial combs with a single spur; hind tibiae with a spur on each comb. Pulvilli not visible at 100 magnification.

Leg proportions:

	F	Ti	Ta <sub>1</sub>	2	3	4	5	Leg ratio
Foreleg	66	35	58	42	32	25	12	1.66
Middle leg	70	56	33	17	11	8	7	0.59
Hind leg	75	75	50	28	25	18	10	0.67

Wing membrane with macrotrichia on distal third only; longitudinal veins with macrotrichia almost the entire length.

Genitalia, Figure 102, mounting variant, Figure 103, very similar to *buckleyi* new species but differing in the narrower anal point, and the strikingly different appendage 2a; appendage 1a is also different.

Paratype males: Wing length 1.26-1.58, mean 1.40 mm (3); leg ratio 2.09 (1); antennal ratio 0.91-1.06, mean 0.97 (3)

Paratypes: Two males, 27-IX-58; 1 male, 6-XI-58; U.S.F.H. One male, 16-X-57; San Jose Creek, Many, La. One male, 13-III-57; at light, Natchitoches, La. In the collections of C.N.C., A.N.S.P.

This species is very similar to the paleartic species, *Tanytarsus (Tanytarsus) recurvatus* Brundin (cf. Brundin, 1947, page 75, figure 113). It differs only in slight features of appendages 1a and 2a. Among the Nearctic fauna it most closely resembles *buckleyi* new species but is differentiated as was described under that species.

This species was reared from larvae collected in aquatic vegetation.

Larva: Exuviae not recovered.

Pupa: Described from exuvia of reared male. Exuvia approximately 2.48 mm long, yellowish-brown with blackish-brown lateral longitudinal markings. Respiratory organ a

simple tubular filament, approximately 0.32 mm long. Abdominal chaetotaxy shown diagrammatically in Figure 104. Posterolateral comb of segment VIII as in Figure 105. Swim fin with about 18 to 20 filaments.

The pupa keys in Roback (1957c, page 132) to couplet 7. It may be distinguished from the species designated by Roback as *Calopsectra* (i.e., *Tanytarsus*) *neoflavella*? (Malloch) by the shorter respiratory organs (0.32 mm versus 0.53 mm); by a different pattern of chaetotaxy (cf. Figure 104 and Roback's figure 516) and by different caudo-lateral combs (cf. Figure 105 and Roback's figure 486).

## TANYTARSUS (TANYTARSUS)

## LIMNETICUS new species

Holotype male: U.S.N.M. No. 66467. Collected from the U. S. Fish Hatchery, Natchitoches, Louisiana, 20-VIII-58, tent trap, R. F. Tyler.

Postocular bristles in one row, beginning medial to dorsal extension of eyes; dorsal extension of eyes rather broad, extension having 4 to 5 facets in a transverse row; minute but distinct frontal tubercles, length 0.02 mm (paratype); palpal proportions 5:10:10:22; antennal ratio 1.44. Head, thorax and abdomen pale; vittae, sternopleuron and postnotum pale ochereous. Wing length 1.71 mm; venarum ratio 1.06. Prealar bristles 3; dorsomedian bristles long and erect; dorsolateral bristles long, erect, in one row; about 14 scutellar bristles in a transverse row.

Legs with tibial combs separate, each comb with a spur; forelegs darkened beyond tibia. Small pulvilli visible at 100 magnification.

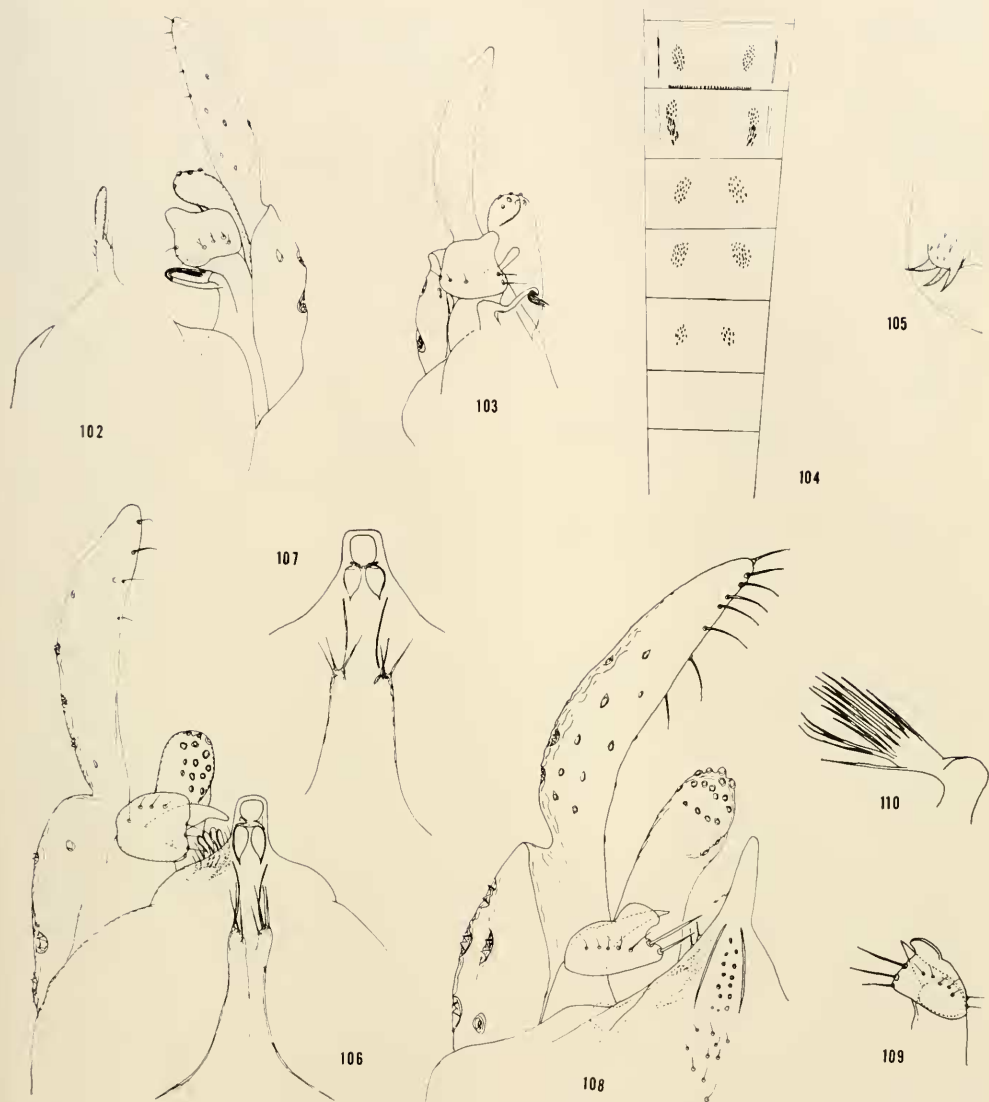
Leg proportions:

	F	Ti	Ta <sub>1</sub>	2	3	4	5	Leg ratio
Foreleg	55	28	70	32	—	—	—	2.50
Middle leg	50	40	26	16	13	8	6	0.65
Hind leg	57	52	35	22	17	10	7	0.67

Wings with R<sub>4+5</sub> terminating distal to M; f-Cu slightly distal to r-m; wing membrane well haired; C and R with long conspicuous pale hairs.

Genitalia, Figures 108, 109, 110.

Paratype males: Wing length 1.67-2.03, mean 1.83 mm (3); leg ratio 2.25-2.50, mean 2.37 (3); antennal ratio 1.40-1.50, mean 1.45 (3).



**Figures 102-105. *Tanytarsus (Tanytarsus) allicis* new species.** 102. male genitalia; 103. variation of male genitalia; 104. pupal chaetotaxy; 105. posterolateral comb of Segment VIII. **Figures 106-107. *Tanytarsus (Tanytarsus) quadratus* new species.** 106. male genitalia; 107. variation of ninth tergite. **Figures 108-110. *Tanytarsus (Tanytarsus) limneticus* new species.** 108. male genitalia; 109. superior appendage; 110. appendage 2a.

Paratypes: Five males, 12-VIII-58; 3 males, 20-VIII-58; 1 male, 28-VIII-58; 2 males, 6-IX-58; 7 males, 12-IX-58; 3 males, 20-IX-58; 2 males, 15-X-58; U.S.F.H. In the collections of A.N.S.P., I.N.H.S., C.N.C., and Cornell University.

This species may be distinguished from the remainder of the Nearctic fauna by its distinctive male genitalia. It keys to *neo-*

*flavellus* Malloch in Johannsen (Johannsen and Townes, 1952, pages 25, 26) but the punctate anal point of that species is totally different.

#### SUMMARY

1. Fifty-seven species of chironomid midges are reported from lentic situations in Louisiana.

2. Of the species described, one is a new

genus and fourteen are species new to science.

3. The immature stages of twelve species are described.

4. Five new taxonomic combinations are given.

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## ABSTRACT

SUBLETTE, JAMES E. (Eastern New Mexico U., Portales). Chironomidae (Diptera) of Louisiana I. Systematics and immature stages of some lentic chironomids of West-Central Louisiana. Tulane Stud. Zool.

Fifty-seven species of chironomid midges are reported, including the following fourteen new species and one new genus: *Ablabesmyia rhamphe*, *Cricotopus remus*, *lebetis*, *Chironomus (Chironomus) natchitochaeae*, (*Dicrotendipes*) *incurvus*, (*Cryptochironomus*) *ponderosus*, *Pedionomus beckae*, *Tanytarsus dendyi*, *xanthus*, *recens*, *quadratus*, *buckleyi*, *allicis*, *limneticus*. The immature stages of twelve species are described. Five new combinations are given: *Ablabesmyia acquifasciata* (*Pentaneura (Ablabesmyia) acquifasciata* Dendy and Sublette), *Chironomus (Cryptochironomus) chaetoala* (*Tendipes (Cryptochironomus) chaetoala* Sublette), *Chironomus (Cryptochironomus) directus* (*Tendipes (Cryptochironomus) directus* Dendy and Sublette), *Chironomus (Cryptochironomus) emorsus* (*Harnischia (Harnischia) emorsa* Townes), *Chironomus (Cryptochironomus) galeator* (*Harnischia (Harnischia) galeator* Townes).